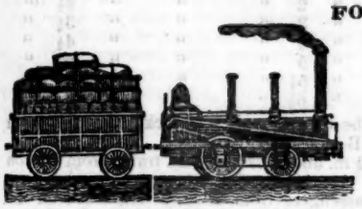
Middlesex Mech. Assoc

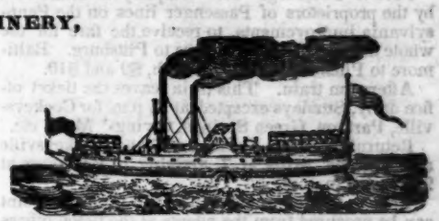
AMERICAN RAILROAD JOURNAL,

AND GENERAL ADVERTISER

FOR RAILROADS, CANALS, STEAMBOATS, MACHINERY, AND MINES.



ESTABLISHED 1831.



PUBLISHED WEEKLY, AT No. 23 CHAMBERS STREET, NEW YORK, AT FIVE DOLLARS PER ANNUM.

SECOND QUARTO SERIES, VOL. II., No. 25.] SATURDAY, JUNE 20, 1846. [WHOLE No. 521, VOL. XIX.

BOSTON AND PROVIDENCE RAILroad. Passenger Notice. Summer Arrangement. On and after Monday, April 6, 1846, the Passenger Trains will run as follows:

For New York—Night Line, via Stonington. Leaves Boston every day, but Sunday, at 5 p.m.

Accommodation Trains, leave Boston at 7½ a.m. and 4 p.m., and Providence at 8 a.m. and 4½ p.m.

Dedham trains, leave Boston at 8 a.m. 12½ m., 3½ p.m., and 6½ p.m. Leave Dedham at 7 a.m. and 9½ a.m. and 2½ and 5½ p.m.

Stoughton trains, leave Boston at 11½ a.m. and 5½ p.m. Leave Stoughton at 7·20 a.m. and 3½ p.m.

All baggage at the risk of the owners thereof.

31 1y W. RAYMOND LEE, *Sup't.*

BRANCH RAILROAD and STAGES CONnecting with the Boston and Providence Railroad.

Stages connect with the Accommodation trains at the Foxboro' Station, to and from Woonsocket. At the Seekonk Station, to and from Lonsdale, R. I. via Pawtucket. At the Sharon Station, to and from Walpole, Mass. And at Dedham Village Station, to and from Medford, via Medway, Mass. At Providence, to and from Bristol, via Warren, R. I.—Taunton, New Bedford and Fall River cars run in connection with the accommodation trains.

NORWICH AND WORCESTER RAILRoad. Summer Arrangement, commencing Monday, April 6, 1846.

Accommodation Trains, daily, except Sunday. Leave Norwich, at 6 a.m., and 4½ p.m. Leave Worcester, at 10 a.m., and 4½ p.m.

☞ The morning Accommodation Trains from Norwich, and from Worcester, connect with the trains of the Boston, and Worcester and Western railroads each way.

The Evening Accommodation Train from Worcester connects with the 1½ p.m. train from Boston.

New York Train via Long Island Railroad:

Leave Allyn's Point for Boston, about 1 p.m., daily, except Sunday.

Leave Worcester for New York, about 10 a.m., stopping at Webster, Danielsonville, and Norwich.

New York Train via Steamboat—Leave Norwich for Boston, every morning, except Monday, on the arrival of the stamboat from New York, stopping at Norwich and Danielsonville.

Leave Worcester for New York, upon the arrival of the train from Boston, at about 4½ p.m., daily, except Sunday, stopping at Webster, Danielsonville and Norwich.

Freight Trains daily each way, except Sunday.—Special contracts will be made for cargoes, or large quanties of freight, on application to the superintendent.

☞ *Fares are Less when paid for Tickets than when paid in the Cars.* ☜

32 1y J. W. STOWELL, Sup't.

BOSTON AND MAINE RAILROAD. Upper Route, Boston to Portland via, Reading, Andover, Haverhill, Exeter, Dover, Great Falls, South & North Berwick, Wells, Kennebunk and Saco.

Summer Arrangement, 1846.

On and after April 13, 1846, Passenger Trains will leave daily, (Sundays excepted,) as follows:

Boston for Portland at 7½ a.m. and 2½ p.m.

Boston for Great Falls at 7½ a.m., 2½ and 4½ p.m.

Boston for Haverhill at 7½ and 11½ a.m., 2½, 4½ and 6 p.m.

Boston for Reading at 7½, 9, and 11½ a.m., 2½, 4½, 6 and 8 p.m.

Portland for Boston at 7½ a.m., and 3 p.m.

Great Falls for Boston at 6½ and 9½ a.m., and 4½ p.m.

Haverhill for Boston at 6½, 8½, and 11 a.m., and 4 and 6½ p.m.

Reading for Boston at 6½, 7½ and 9½ a.m., 12 m., 1½, 5 and 7½ p.m.

The Depot in Boston is on Haymarket Square.

Passengers are not allowed to carry Baggage above $50 in value, and that *personal* Baggage, unless notice is given, and an extra amount paid, at the rate of the price of a Ticket for every $500 additional value. CHAS. MINOT, *Super't.*

GEORGIA RAILROAD. FROM AUGUSTA to ATLANTA—171 MILES. AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO OOTHCALOGA, 80 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 388 miles in length, from Charleston to Oothcaloga on the Oostenanla River, in Cass Co., Georgia.

Rates of Freight, and Passage from Augusta to Oothcaloga.

On Boxes of Hats, Bonnets, and Furniture per foot.....16 cts.
" Dry goods, shoes, saddlery, drugs, etc., per 100 lbs.....95 "
" Sugar, coffee, iron, hardware, etc.....65 "
" Flour, bacon, mill machinery, grindstones, etc.....33½ "
" Molasses, per hogshead $9·50; salt per bus.20 "
" Ploughs and cornshellers, each.....75 "

Passengers $10·50; children under 12 years of age half price.

Passengers to Atlanta, head of Ga. Railroad, $7.

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight may be paid at Augusta, Atlanta, or Oothcaloga.

J. EDGAR THOMSON,
Ch. Eng. and Gen. Agent.

Augusta, Oct. 21 1845. •44 1y

SUMMER ARRANGEMENT.—NEW YORK AND ERIE RAILROAD LINE, from April 1st until further notice, will run daily (Sundays excepted) between the city of New York and Middletown, Goshen, and intermediate places, as follows:

FOR PASSENGERS—

Leave New York at 7 A. M. and 4 P. M.
" Middletown at 6½ A. M. and 5½ P. M.

FARE REDUCED to $1 25 to Middletown—way in proportion. Breakfast, supper and berths can be had on the steamboat.

FOR FREIGHT—

Leave New York at 5 P. M.
" Middletown at 12 M.

The names of the consignee and of the station where to be left, must be distinctly marked upon each article shipped. Freight not received after 5 P. M. in New York.

Apply to J. F. Clarkson, agent, at office corner of Duane and West sts.

H. C. SEYMOUR, Sup't.

March 25th, 1846.

Stages run daily from Middletown, on the arrival of the afternoon train, to Milford, Carbondale, Honesdale, Montrose, Towanda, Owego, and West; also to Monticello, Windsor, Binghamton, Ithaca, etc., etc. Agent on board. 13 tf

BALTIMORE AND OHIO RAILROAD. MAIN STEM. The Train carrying the Great Western Mail leaves Baltimore every morning at 7½ and Cumberland at 8 o'clock, passing Ellicott's Mills, Frederick, Harpers Ferry, Martinsburgh and Hancock, connecting daily each way with—the Washington Trains at the Relay House seven miles from Baltimore, with the Winchester Trains at Harpers Ferry—with the various railroad and steamboat lines between Baltimore and Philadelphia and with the lines of Post Coaches between Cumberland and Wheeling and the fine Steamboats on the Monongahela Slack Water between Brownsville and Pittsburgh. Time of arrival at both Cumberland and Baltimore 5½ P. M. Fare between those points $7, and 4 cents per mile for less distances. Fare through to Wheeling $11 and time about 36 hours, to Pittsburgh $10, and time about 32 hours. Through tickets from Philadelphia to Wheeling $13, to Pittsburgh $12. Extra train daily except Sundays from Baltimore to Frederick at 4 P. M., and from Frederick to Baltimore at 8 A. M.

WASHINGTON BRANCH.

Daily trains at 9 A. M. and 5 P. M. and 12 at night from Baltimore and at 6 A. M. and 5½ P. M. from Washington, connecting daily with the lines North, South and West, at Baltimore, Washington and the Relay house. Fare $1 60 through between Baltimore and Washington, in either direction, 4 cents per mile for intermediate distances. s13y1

BALTIMORE AND SUSQUEHANNA Railroad. The Passenger train runs daily except Sunday, as follows:

Leaves Baltimore at 9 a.m., and arrives at 6½ p.m. Arrives at York at 12¼ p.m., and leaves for Columbia at 1½ p.m. Leaves Columbia at 2 p.m., and leaves York for Baltimore at 3 p.m. Fare to York $2. Wrightsville $2 50, and Columbia $2 62½. The train connects at York with stages for Harrisburg, Gettysburg, Chambersburg, Pittsburg and York Springs.

Fare to Pittsburg. The company is authorized by the proprietors of Passenger lines on the Pennsylvania improvements, to receive the fare for the whole distance from Baltimore to Pittsburg. Baltimore to Pittsburg.—Fare through, $9 and $10.

Afternoon train. This train leaves the ticket office daily, Sundays excepted, at 3½ p.m. for Cockeysville, Parkton, Green Springs, Owings' Mills, etc.

Returning, leaves Parkton at 6 and Cockeysville and Owings' Mills at 7, arriving in Baltimore at 9 o'clock a.m.

Tickets for the round trip to and from any point can be procured from the agents at the ticket offices or from the conductors in the cars. The fare when tickets are thus procured, will be 25 per cent. less, and the tickets will be good for the same and following da- any passenger train.

D. C. H. BORDLEY, *Sup't.*
31 1y Ticket Office, 63 North st.

CENTRAL RAILROAD—FROM SAVAN- nah to Macon. Distance 190 miles.

This Road is open for the transportation of Passengers and Freight. Rates of Passage, $8 00. Freight—

On weight goods generally...	50 cts. per hundred.
On measurement goods	13 cts. per cubic ft.
On brls. wet (except molasses and oil).....	$1 50 per barrel.
On brls. dry (except lime)...	80 cts. per barrel.
On iron in pigs or bars, castings for mills, and unboxed machinery.....	40 cts. per hundred.
On hhds. and pipes of liquor, not over 120 gallons.....	$5 00 per hhd.
On molasses and oil.....	$6 00 per hhd.

Goods addressed to F. WINTER, Agent, forwarded free of commission. THOMAS PURSE,
40 Gen'l. Sup't. Transportation.

NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.

On and after Friday, May 1st, 1846, the cars will run as follows:

Leave City Hall for Yorkville, Harlem and Morrianna, at 7, 8, 9, 10 and 11 a. m., and at 1, 2, 3 30, 4 30, 5, 6, and 6 30 p. m.

Leave City Hall for Fordham and Williams' Bridge, at 7, 10 and 11 a. m., and at 2, 3 30, 5, and 6 30 p. m.

Leave City Hall for Hunt's Bridge, Bronx, Tuckahoe, Hart's Corners and White Plains, at 7 and 10 a. m., and at 2 and 5 p. m.

Leave Harlem and Yorkville, at 7 10, 8 10, 9, 10, 11 10 a. m., and at 12 40, 2, 3 10, 5 10, 5 30, 6 10, and 7 p. m.

Leave Williams' Bridge and Fordham, at 6 45, 7 45, and 10 45 a. m., and at 12 15, 2 45, 4 45, and 5 45 p. m.

Leave White Plains, at 7 and 10 a. m., and at 2 and 5 p. m.

The freight train will leave the City Hall at 1 o'clock, p. m., and leave White Plains at 1 o'clock in the morning.

On Sundays, the White Plains train will leave the City Hall at 7 a. m. and 5 30 p. m.; will leave White Plains at 7 a. m. and 6 p. m.

On Sundays, the Harlem and Williams' Bridge trains will be regulated according to the state of the weather. 18

RAILROAD IRON.—THE "MONTOUR Iron Company," Danville, Pa., is prepared to execute orders for the heavy Rail Bars of any pattern now in use, in this country or in Europe, and equal in every respect in point of quality. Apply to MURDOCK, LEAVITT & CO., *Agents.*
Corner of Cedar and Greenwich Sts. 48 1y

LITTLE MIAMI RAILROAD.—1846.— Summer Arrangement.

Two passenger trains daily. On and after Tuesday, May 5th, until further notice, two passenger trains will be run—leaving Cincinnati daily (Sundays excepted) at 9 a. m. and 1½ p. m. Returning, will leave Xenia at 5 o'clock 50 min. a. m., and 2 o'clock 40 min. p.m.

On Sundays, but one train will be run—leaving Cincinnati at 9, and Xenia at 5 50 min. a. m.

Both trains connect with Neil, Moore & Co.'s daily line of stages to Columbus, Zanesville, Wheeling, Cleveland, Sandusky City and Springfield.

Tickets may be procured at the depot on East Front street.

The company will not be responsible for baggage beyond fifty dollars in value, unless the same is returned to the conductor or agent, and freight paid at the rate of a passage for every $500 in value above that amount. W. H. CLEMENT,
19 Superintendent.

LEXINGTON AND OHIO RAILROAD. Trains leave Lexington for Frankfort daily, at 5 o'clock a.m., and 2 p.m.

Trains leave Frankfort for Lexington daily, at 8 o'clock a.m. and 2 p.m. Distance, 28 miles. Fare $1·25.

On Sunday but one train, 5 o'clock a.m. from Lexington, and 2 o'clock p.m. from Frankfort.

The winter arrangement (after 15th September to 15th March) is 6 o'clock a.m. from Lexington, and ma. 9. from Frankfort, other hours as above.
351y

RAILROAD IRON—1700 TONS VERY Best English Rails, ready to be delivered.—These Rails weigh 60 lbs., the lineal Yard, are 3⅛ inches deep; 4 inches deep at base; 2½ inches wide at top; 17½ feet long, except one-tenth of 15 and 12½ feet in length.

A first rate Steam Pile Driver built by "*Dunham & Co.*," has never been in use, is in perfect order, and for sale a bargain; also 12 Railway Passenger Cars that have never been used, which will be sold very low. DAVIS, BROOKS & CO.,
June 1. 30 Wall Street.

CALIGRAPHIC BLACK LEAD PEN- cil, Manufactured by E. Wolff and Son, 23 Church Street, Spitalfields, London.

The Caligraphic Pencils have been invented by E. Wolff and Son, after the expenditure of much time and labor. They are the result of many experments; and every effort that ingenuity and experience could suggest, has been made to insure the highest degree of excellence, and the profession may rely upon their being all that can be desired.

They are perfectly free from grit; and for richness of tone, depth of color, delicacy of tint, and evenness of texture, they are not to be equalled by the best Cumberland Lead that can be obtained at the present time, and are infinitely superior to every other description of Pencil now in use.

The Caligraphic Pencils will also recommend themselves to all who use the Black Lead Pencils as an instrument of professional importance or recreation, by their being little more than half the price of other pencils.

An allowance will be made on every groce purchased by Artists or Teachers.

May be had of all Artists, Colourmen, Stationers, Booksellers, etc.

A single pencil will be forwarded as a sample, upon the receipt of postage stamps to the amount.

Caution.—To prevent imposition, a highly finished and embossed protection wrapper, difficult of imitation, is put around each dozen of Pencils. Each Pencil will be stamped on both sides, "Caligraphic Black Lead, E. Wolff and Son, London."

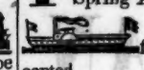
The subscriber has on hand a full supply of Wolff and Sons celebrated Creta Loevis, or Colored Drawing Chalks, also their pure Cumberland Lead and extra prepared Lead Pencils, and Mathematical Lead Pencils.

P. A. MESIER,
Stationer and Sole Agent,
No. 49 Wall Street.

N. B.—A complete assortment of Steven's *Genuine* Inks, Fluids, Imitating Wood stains, and Graining Colours at the Manufacturers prices. 19tf

---

TROY AND GREENBUSH RAILROAD. Spring Arrangement. Trains will be run on this Road as follows, until further notice, Sundays excepted.



Leave Troy at	6½	A.M.	Leave Albany at	7	A.M.
" "	7½	"	" "	8	"
" "	8½	"	" "	9	"
" "	9½	"	" "	10	"
" "	10½	"	" "	11	"
" "	11½	"	" "	12	M.
" "	1	P.M.	" "	1½	P.M.
" "	2	"	" "	2½	"
" "	3	"	" "	3½	"
" "	4	"	" "	4½	"
" "	5	"	" "	5½	"
" "	5½	"	" "	6	"
" "	6½	"	" "	7	"

☞ The 6½ a.m. and 2 o'clock p.m. runs from Troy, to Boston runs.

The 12 m. and 6 o'clock p.m. trains from Boston runs.

☞ Passengers from Albany will leave in the Boston Ferry Boat at the foot of Maiden Lane, which starts promptly at the time above advertised.

Passengers will be taken and left at the principal Hotels in River Street, in Troy, and at the Nail Works and Bath Ferry.

L. R. SARGENT,
Superintendent.
Troy, April 1st, 1846. 14 1y

MACHINE WORKS OF ROGERS, Ketchum & Grosvenor, Patterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works beingextensive and the number of hands employed beinglarge, they are enabled to execute both large and small orders with promptness and despatch.

Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery

of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
a45 Paterson, N. J., or 60 Wall street, N. York.

TO RAILROAD COMPANIES AND MAN- ufacturers of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside. THOMAS & EDMUND GEORGE,
ja45 N. E. cor. 12th and Market sts., Philad., Pa.

THE SUBSCRIBERS, AGENTS FOR the sale of

Codorus,
Glendon,
Spring Mill and
Valley,

} Pig Iron.

Have now a supply, and respectfully solicit the patronage of persons engaged in the making of Machinery, for which purpose the above makes of Pig Iron are particularly adapted.

They are also sole Agents for Watson's celebrated Fire Bricks and prepared Kaolin or Fire Clay, orders for which are promptly supplied.

SAM'L. KIMBER, & CO.,
59 North Wharves,
Jan. 14, 1846. [1y4] *Philadelphia, Pa.*

RAILROAD IRON AND LOCOMOTIVE Tyres imported to order and constantly on hand by A. & G. RALSTON
Mar. 20tf 4 South Front St., Philadelphia.

THE NEWCASTLE MANUFACTURING Company continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention. ANDREW C. GRAY,
a45 President of the Newcastle Manuf. Co.

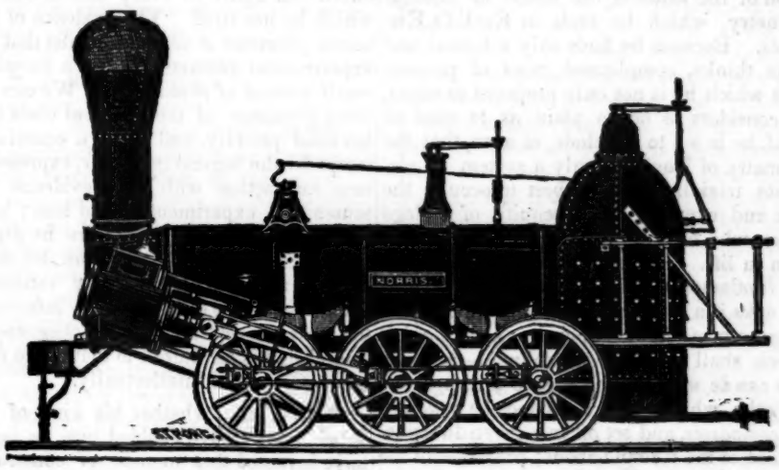
CUSHMAN'S COMPOUND IRON RAILS, etc. The Subscriber having made important improvements in the construction of rails, mode of guarding against accidents from insecure joints, etc. —respectfully offers to dispose of Company, State Rights, etc., under the privileges of *letters patent* to Railroad Companies, Iron Founders, and others interested in the works to which the same relate. Companies reconstructing their tracks now have an opportunity of *improving* their roads on terms very advantageous to the varied interests connected with their construction and operation; roads having in use flat bar rails are particularly interested, as such are permanently available by the plan.

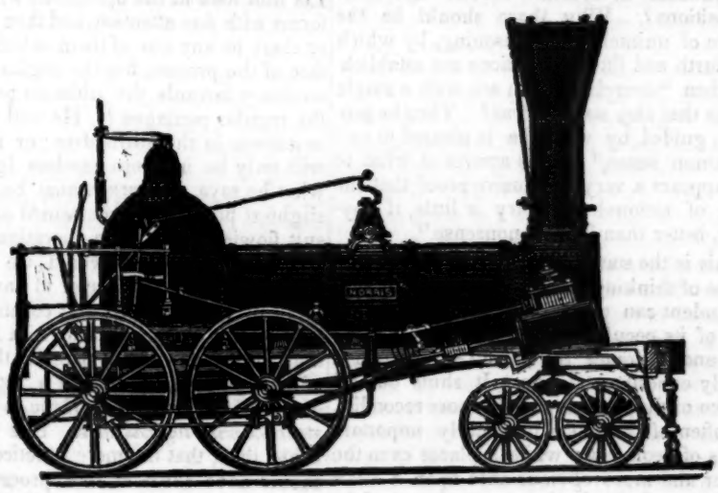
W. Mc. C. CUSHMAN, *Civil Engineer*,
Albany, N. Y.

Mr. C. also announces that Railroads, and other works pertaining to the profession, may be constructed under his advice or personal supervision. Applicaitons must be post paid.

NORRIS' LOCOMOTIVE WORKS.

BUSH HILL, PHILADELPHIA, Pennsylvania.





MANUFACTURE their Patent 6 Wheel Combined and 8 Wheel Locomotives of the following descriptions, viz:

Class	1,	15	inches	Diameter	of	Cylinder,	× 20	inches Stroke.
"	2,	14	"	"	"	× 24	"	"
"	3,	14½	"	"	"	× 20	"	"
"	4,	12½	"	"	"	× 20	"	"
"	5,	11½	"	"	"	× 20	"	"
"	6,	10½	"	"	"	× 18	"	"

With Wheels of any dimensions, with their Patent Arrangement for Variable Expansion.

Castings of all kinds made to order: and they call attention to their Chilled Wheels for the Trucks of Locomotives, Tenders and Cars.

NORRIS, BROTHERS.

RICH & CO'S IMPROVED PATENT SALAMANDER SAFES.

Warranted free from dampness, as well as fire and thief proof.

Particular attention is invited to the following certificates, which speak for themselves:

TEST No. 10.

Certificate from Mr. Silas C. Field, of Vicksburgh, Mississippi.

On the morning of the 14th ult., the store owned and occupied by me in this city, was, with its contents, entirely consumed by fire. My stock of goods consisted of oil, rosin, lard, pork, sugar, molasses, liquors, and other articles of a combustible nature, in the midst of which was one of Rich's Improved Patent Salamander Safes, which I purchased last October of Mr. Isaac Bridge, New Orleans, and which contained my books and papers. This safe was red hot, and did not cool sufficiently to be opened until 16 hours after it was taken from the ruins. At the expiration of that time it was unlocked, when its contents proved to be entirely uninjured, and not even discolored. I deem this test sufficient to show that the high reputation enjoyed by Rich's Safes is well merited. S. C. FIELD.

Vicksburgh, Miss., March 9th, 1846.

Certificate from Judge Battaile, of Benton, Mississippi.

In October last I purchased one of Rich's Improved Salamander Safes, which was in the fire at the burning of my law office, and several adjoining buildings in this place, on the 17th of November last, at about half-past one o'clock A. M. of that day. The building was entirely consumed; and I take pleasure in stating that my papers in said safe were preserved without injury. A receipt book which was in said safe, had the glue drawn out of its leather back by the heat, and the back broken; but the leaves of the book, and the writing thereon, were entirely uninjured; and some of the writing which was of blue ink, was also left wholly uneffaced and not in the least faded. Said safe was by the fire heated perfectly red hot, and I do not hesitate to say, that said safe is a perfect security against fire. But the safe tumbled over during the fire, and being heated red hot, the outer sheeting of the door became pressed in, and the bolts of the lock bent, so that it could not be unlocked, and I had to have it broken open. JOHN BATTAILE.

Benton, Miss., December 27,1845.

Still other Tests in the Great Fire of July 19, 1845.

The undersigned purchased of A. S. Martin, No. 138½ Water street, one of Rich's Improved Patent Salamander Safes, which was in our store, No. 54 Exchange place. The store was entirely consumed in the great conflagration on the morning of the 19th inst. The safe was taken from the ruins 52 hours after, and on opening it, the books and papers were found entirely uninjured by fire, and only slightly wet—the leather on some of the books was parched by the extreme heat. (Signed,)

RICHARDS & CRONKHITE.

New York, 21st July, 1845.

One of Rich's Improved Salamander Safes, which I purchased on the 2d of June last of A. S. Marvin, 138½ Water street, agent for the manufacturer, was exposed to the most intense heat during the late dreadful conflagration. The store which I occupied, No. 46 Broad street, was entirely consumed; the safe fell from the 2d story, about 15 feet, into the cellar, and remained there 14 hours, and when found, I am told, and from its appearance afterwards, should judge that it had been heated to a red heat. On opening it, the books and papers were found not to have been touched by fire. I deem this ordeal sufficient to confirm fully the reputation that Rich's safe has already obtained for preserving its contents against all hazards. (Signed,)

WM. BLOODGOOD.

New York, 21st July, 1845.

The above safes are finished in the neatest manner, and can be made to order at short notice, of any size and pattern, and fitted to contain plate, jewelry, etc. Prices from $50 to $500 each. For sale by

A. S. MARVIN, General Agent,
138½ Water st., N. Y.

Also by Isaac Bridge, 76 Magazine street, New Orleans.

Also by Lewis M. Hatch, 130 Meeting street, Charleston, S. C. 16 tf

Mathematics as a Branch of Professional Study.

(Continued from page 539.)

We have stated in our last article our general views respecting the origin of the difficulties experienced by the young algebraist in his early studies. There is one other which we have implied rather than expressed —the continually recurring inquiry into the *utility* of the study. It wears to him the aspect of a system of ingenious trifling rather than of a practical pursuit; since he can find no case of a professional nature either in his usual books or in the oral instructions of his superior, to which his algebra can in any way be applied. We have alluded to the cause of this: that though pure algebra can be applied *directly* in professional inquiries, the cases are not pointed out in the books which he is likely to read, nor are those cases themselves so numerous as to render the formation of a good collection of examples an easy task.

The great value of algebra is, let him ever remember, not as a science *per se*, but as *an organ of future research*. Its great use is prospective; and with prospective reference, it is not only invaluable, but altogether indispensable. It will confer upon him a *power* of great magnitude in his professional studies; though like the acquisition of a language, it can be of little real value to him beyond the uses which he shall afterwards make of it.—The most ample acquirements of a pure algebraic character, we should deem to be idly made by the engineer or architect, were his mathematical studies not to take a wide range beyond that subject, and his application to be ramified into every department of his profession.

We have already intimated that algebra and geometry are almost alike repulsive upon the first glance; although in the two sciences the causes of the dislike are not precisely the same. On the first head we have already spoken—we now proceed to the second.

It very naturally occurs to the student to procure a copy of *Simson's Euclid;* and, of course, he reads the definitions, axioms, postulates, and a few of the earlier propositions of the first book, with the zeal of absolute determination to become a geometer. He pauses to reflect upon his progress, and asks himself what he has learnt that he did not know before? His mind, his eye, and his hand have already been familiar with the circle and the triangle; and he had, or thinks he had, acquired some little acquaintance with the geometrical properties of the simpler classes of figures. Undoubtedly those properties of figures which are intellectually true, are also visually true; and tolerably obvious properties of the figures most commonly used will be subjected to the practised eye by a survey of the diagram, and verified by actual measurement in any selected example of that class. By varying the related parts of the figure, and finding the law to hold in all the cases that he shall have tried, he is not only constrained to admit, but considers it absolutely proved, that the properties in question are universally true. Those students, therefore, who have been at all employed on plan drawing, (if not otherwise *previously* disciplined,) are invariably self-educated in a mode of research that is *directly opposed* in its spirit and character, to the true mental geometry of Euclid. We regret to say that it is to be found in the school of "*Practical Geometers*" of England; and we are ashamed to add that it is to be found there *only*. One of our own correspondents has even urged that the "eye is a good geometer, when properly taught"; and in this sense the phrase is intelligible; although the doctrine contained in it is most pernicious as a principle, in reference to a professional course of study.

The retrospective survey of his progress to which we have alluded, will inevitably have led the student to institute a very unsafe criterion of the value of the course of rational geometry, which he finds in Euclid's Elements. Because he finds only a formal, and as he thinks, complicated, proof of propositions which he is not only prepared to admit, but considers to be so plain as to need no proof, he is led to conclude at once, that the geometry of Euclid is only a system of elaborate trivialities, fit at best to occupy the time and exercise the ingenuity of college idlers, who have no serious business to perform in life. He soon learns to cavil with the fundamental principles of the science.—He asks if a line *can be drawn* which shall have no breadth, or a point *can be marked* which shall have no magnitude—or a surface *can be made* which has no thickness?—He asks, why cannot a distance be *taken in the compasses*, and set off in a given direction, instead of the "round-about" processes of the constructions in Euclid's second and third propositions? Why there should be the parade of unintelligible reasoning, by which the fourth and fifth propositions are established, when "everybody" can see with a single glance that *they must be true?* Thus he proceeds, guided by what he is pleased to call "common sense," till he arrives at what to him appears a very conclusive proof that the study of rational geometry is little, if anything, better than "sheer nonsense."

This is the starting point of the most fatal course of thinking in respect of geometry that the student can pursue. It deprives the science of its peculiar characteristics *as a science*, and degrades the mental system into a merely experimental one. It shuts out all chance of the *discovery* of the more recondite, and often of the more practically important truths of geometry; whilst it places even the earlier and more obvious ones upon a basis which to every reflecting person is one of the most unsatisfactory character.

We entreat of such readers and such thinkers an attentive consideration of the remarks that we are about to offer; and in order to render our remarks as intelligible as possible, we shall either enforce them by illustration, or actually found them upon particular examples.

Let us suppose, then, that it is required (*Euc.* iv. 11) to inscribe a regular pentagon in a given circle, and that the experimental geometer, to whom we have referred, is familiar with the actual mode of construction.—He has verified by actual stepping the compasses from angle to angle, the truth of that construction in a great number of cases; and never having found it fail, he does not entertain the least doubt of its correctness. These experiments are *his* evidence of its truth.—Let now another and a rational geometer state his grounds of belief of the same truth. The two conclusions agree as to the fact; but the amount of certainty is remarkably contrasted. The rational geometer is led by irresistible evidence to the conclusion that such a course of operation as is prescribed, cannot, under any circumstances, *but produce* a regular pentagon; whilst the experimental geometer concludes that this course will *probably* produce it in any case, since it has produced that figure in every one of the cases which he has tried. The evidence of the rational geometer is *absolute*, whilst that of the experimental geometer is only a *varying but small amount of probability.* We can imagine a geometer of the practical class tossing his head proudly, and with a scornful contempt for the logical geometer, expressing *his own* satisfaction with such evidence as his senses and experiments afford him; but still we entreat him to pause before he dismisses this question so cavalierly from his mind.—He will soon see that not only *intellectually* is his knowledge of an infinitely inferior class, but that in reference to *practice* itself, his knowledge is as inferior to that of the rational geometer as it is intellectually.

We ask him, whether his kind of knowledge would have enabled him, *in initio*, to have invented this method of construction? Let him look at the operations which he performs with due attention, and then say whether there be any one of them which, upon the face of the process, has the slightest apparent tendency towards the ultimate production of the regular pentagon? He will not venture to answer in the affirmative; or if he do, it will only be in mere random ignorance of what he says. There cannot be, in fact, the slightest probability entertained of such a result flowing from those operations; and we will add more—that could we suppose a practised rational geometer to have by some accident never studied that construction, and it were now propounded to him for the first time, even *he* would not perceive the tendency of that operation to produce a regular pentagon, *without first going through the demonstration with logical care.* It is very improbable, then, that the mere practical geometer should have *invented* that process; and indeed, we can hardly suppose that he will prefer his claim to the inventions in even practical geometry beyond the simplest and most obvious constructions. He must trust to the theoretical geometer for even his own practice.

The instance we have just given, so far from being a solitary one, is only a very limited specimen of the class of practical problems that the professional engineer and architect are called upon to construct. It is sufficient as an illustration of the fact—that

had the theoretical geometry of the school of Plato not been created, there could only have existed an extremely small number of the practical geometrical constructions that are in daily professional use. This, at any rate, ought to produce a feeling very different from the supercilious contumely with which "practical men" are wont to treat the "mere theorist;" and should create a feeling of respect for the superior mental powers of the logical geometer, and gratitude for the benefits which he has conferred upon the arts of construction. But this is not all. The problems of plane geometry, important as they are, are far less important than those which have relation to space of three dimensions.—It is true, that most practical men have obtained a few crude notions respecting orthographic projection, and can perform some trivial operations connected with "plan and elevation," whilst a select few "can put a building in perspective." Still their knowledge is of the same nature as their knowledge of the construction of the pentagon, whilst their conceptions are still more confused, and their operations more hesitatingly performed than they were in that case. A slight variation of the data of the problem, under certain circumstances, creates insuperable difficulties, and the artist is at length obliged to complete his work *trusting to the eye alone*; or else to construct the whole in model at great labor and expense—and this not for *illustration* or the facilitation of clear conception, but for the purpose of obtaining a *scals of actual measures* for the construction of the work. The theoretical geometer, on the other hand, would have in general been able to have deduced all the measures, to have formed all the scales, and to have indicated all the constructions which would have been requisite for the object in view; and that at far less expense of time, in a manner perfectly applicable to all possible cases of magnitude and proportion, and accompanied by demonstrations of the inevitable correctness of the entire series of steps in the process. In fact, the theoretical geometer is the only really practical geometer; and those who commonly call themselves practical geometers are mere mechanists, working by rule, as much as the carpenter or brick-layer; only they work with different instruments and with greater delicacy of manipulation.

We have, in a former paper of the *Miscellanea Mathematica*, referred to the late Mr. Nicholson as the only English writer on the geometry of space in reference to the arts of construction. Nicholson is admitted on all hands to have been acquainted with the ancient geometry, both as to principles and methods; and it would be difficult to show that he has left a successor who is wholly given up to the objects he had in view—the application of pure geometry to the arts of construction. His works too, as we have said before, are the only ones to which the profession can refer with the slightest expectation of finding any process that may be required for practical use. This circumstance of itself would, we should think, have its weight upon our "practical geometers" who have so insultingly contemned "theoretical persons;" inasmuch, as it shows them that the few rules which of Nicholson has put them in possession, were not the inventions of mere mechanical draughtsmen, but the reward of theoretical investigation.

We must be allowed a momentary digression. It is insinuated by Tredgold (*Joinery, Encyc. Britt.*) that Nicholson "derived much assistance" from the writings of Monge and others of the French geometers. Now, we yield to no one in our admiration of the French writers on these subjects, and we believe we are in a condition to offer a decided opinion on this question. It will be recollected that a considerable portion of the works of Monge—(all, or nearly all, that related to the point, line, and plane)—was translated by the late Mr. Webster, and published in *Nicholson's Architectural Dictionary*. This article embodied, in a most elegant form, the fundamental principles and elementary practice of descriptive geometry; and hence the system was laid open to professional men as much as it was to Nicholson himself, and the same "assistance" might have been derived by others that is alleged to have been derived by Nicholson. If, therefore, he has really so obtained the stated assistance, and others have not, it must be attributed to the superior power which his *theoretical* geometry gave him over his competitors. But we more than question the statement; we dispute its truth. Nicholson never fully comprehended the character of the descriptive geometry, and the few elementary constructions which he has given in his works, bear ample testimony to his never having been familiar with the French writers on these subjects. Beyond picking out an isolated construction here and there, and modifying it to suit the *un*geometrical minds of his "practical" readers, we know nothing that Nicholson *can* have taken from that source; and we confess it appears like injustice to Nicholson to suppose that he was incapable of devising those constructions, as their difficulty is, in every case, by no means great to a mind familiar with the objects to which the constructions related.—There is still to be urged in confirmation of Nicholson's having really invented those processes, that the development of them is, in general, inferior as to arrangement of work and facility for obtaining the results, to those given by the French writers. Can any stronger proof of the independence of Nicholson's invention of them be offered? Still, we would not, for one moment, suggest in explanation of Tredgold's error, that it was a mere ebullition of professional jealousy, or anything more than a mistake, to which his own extremely confined knowledge of these subjects would render him peculiarly liable.

But supposing for the moment that Nicholson *did* copy from Monge, let us ask our "practical geometers" who and what Monge was? He was appointed at 20 years of age professor of geometrical drawing in the school of military engineers at Mezieres; he being then undisputedly the finest draughtsman of his time even in France. But he was then a mere draughtsman: there was not his superior either in genius or acquirements in Europe—though Euler, Laplace and Lagrange were his contemporaries. Monge's discoveries were scientific discoveries—his inventions were the reward of his real science.—The "Descriptive Geometry" was only one small part of his contributions to mathematical discovery: though from being the most practical it had obtained for him a wider and more popular celebrity than all his other researches. Still, none but a man of the most profound geometrical science could have produced the system to which his name must ever be attached. Let us not be misunderstood. Many of the *processes* themselves which Monge has so beautifully systematized were matters of familiar knowledge amongst the French architects, long before Monge's time; and in most cases, *demonstrations*, more or less elegant, are to be found in earlier works—especially in the writings of Desargues and Frezier. Monge's great merit as regards this class of researches (we expect, in the present case, the merely theoretical applications of his principles) consisted in his giving to the scattered elements of construction a consistent arrangement, dependent upon pure geometrical relationship. His work contains the real general problems that occur in construction—not their applications to specified professional cases. The latter object has, however, been amply fulfilled by his pupils and successors. The inventors of the problems which Monge found in existence, were also rational geometers; and without a considerable degree of such power as the rational geometer alone possesses, those constructions would never have been invented. Let us not, then, "lay the flattering unction to our souls" that at any period of practical history the processes of the geometry of space have been invented by mere experimental and empirical persons. Mentally speaking, "there were giants in *those* days," as well as in our own.

We have said that Nicholson was a geometer in a rational sense; yet his was limited knowledge, and his skill was not of a high order—nor were his views or researches either widely expanded or geometrically elegant. In respect to the geometry of space, he had no English models upon which to form his mental habits; and he appears, indeed, to have viewed every problem which undertook strictly and entirely in reference to the practical object that suggested it. His researches terminated with the solution of which he was in quest; and of any attempt at systematizing his results with the results of collateral general inquiries, none of his writings display the slightest trace. He seldom gives a demonstration of any process—never but of the simplest; and we have good ground to doubt whether, as a general practice, he ever took the trouble to write out a demonstration of any considerable degree of complexity. Those which he has given are almost invariably clumsy and inelegant; and it is more than possible that his real investigations were mentally performed upon unlettered models of the objects under consideration. He, however, understood, what the

"profession" of his time required—*rules, not reasons;* and he was too wise a book-maker to increase the price of his works by the insertion of what he foreknew nobody would read.

Although Nicholson has thus added to the rules for actual construction a number of useful processes, he has at the same time, somewhat encourged the system of experimental geometry amongst professional men which we so strongly deprecate. Yet we would urge that Nicholson owed his discoveries to the amount of geometrical science which he possessed, and not to mere tact, shrewdness of observation, or still less to a mind of any peculiar powers. His powers were in no respect above the average of those of his contemporaries; but his mental discipline had been different from that of his professional brethren. His history offers no justification for the architect and engineer of one day affecting to despise, or even for neglecting, the study of the rational geometry in a systematic form.

The demands both of architecture and engineering upon geometry are, however, daily becoming more numerous and more profound in their character. Who is to answer these demands? Most assuredly not the mere mechanical draughtsman or experimental geometer. The ordinary cases of theoretical solid geometry contain but little research into the class of problems which these professions require. In themselves and apart from their uses, too, these problems possess but little interest to the speculative geometer; and he is not likely to enter upon such investigations without an adequate personal motive. The ordinary technical terms, also, in which these problems are expressed amongst workmen, render them unintelligible to the general scholar, and hence there is little prospect of obtaining the aid from him which we have obtained in the problems of plane geometry. We are therefore thrown upon our own resources, and it becomes imperative that we devote our own energies to meet the exigency. A better opening for the exertions of the fairest professional ambition cannot be pointed out, than that which is furnished by the cultivation of the *descriptive geometry* and its application to practical purposes. Yet, let no one dream of a "royal road to geometry" or imagine that this career is open to any but those who enter at the "wicket gate" of Euclid himself.

If the reasons we have given shall effectually convince our professional student that a regular and more systematic study of the pure geometry is *essential* to the accomplishment of his hopes and designs in life, we shall not have penned these remarks in vain. We cannot indeed bring ourselves to believe that our representations will pass wholly unheeded. We shall, therefore, proceed to show them *how* to pursue their studies,—to remove a few of the preliminary obstacles,—and to trace the subjects that will especially and successfully demand the attention of the student.

Steam Navigation---Its Power and Importance.]

BY J. MACGREGOR, ESQ.

When we reflect upon the wonderfully increased intercourse between the United Kingdom and the United States—and when we estimate the comparatively speaking limitation of the distance by calculating the time required now with that occupied formerly, in passing to and fro between both countries—it would be rash and hazardous to give an absolute opinion on the future elements, rapidity and extension of navigable power. It was but late in the world's history, when a Dutch ship performed the voyage, by leaving Rotterdam or Amsterdam in the spring of one year, sailing only during the day, and furling her sails and, laying-to during the night; and on reaching New York, then called New Amsterdam, this ship was discharged, unrigged, and laid up for the winter. On the following spring, this ship was rigged, her condition examined and repaired, then laden with wood, fish, or furs, and then made her homeward voyage during the summer, as slowly as her outward passage was performed the preceding year.

The voyage was afterwards performed out and home the same year. English ships then made two voyages during the year; and growing bolder, three voyages, to and from America were made annually by the same ship. Those splendid vessels, the Liverpool and New York line of sailing packets, were then established, and the intercourse between Europe and America astonished the world. Steamships were now seemingly about supplanting these sailing ships, at least in the carriage of passengers.

The space between the old and new world ceases to be calculated by miles and leagues—days and hours measure the distance.—Liverpool and Halifax are brought within 10 days, and Liverpool and Boston within 12 days of each other.

Steam vessels now ply along the coasts of Africa, in the Chinese seas, and along the shores and rivers of New Holland.

The steamships now employed between London and Scotland are of enormous power and magnitude. So are those which run between the Mersey and Clyde, and between the two latter rivers and the several ports of Ireland.

The float of the General Steam Navigation company maintains a constant intercourse with the ports of France, Holland, and Germany, as well as in the coasting trade of the British channel.

The states of continental Europe are also advancing in the acquisition of steam power. France, Austria, and Russia are the foremost in the number of their steamships. Austria excels all the states of the continent in merchant steamships. France and Russia in steamships of war. The Italian states, especially Naples and Tuscany, possess several well-built and well-navigated steamships.—Prussia and Holland, on the Rhine, contribute greatly to the facility of intercourse.—Belgium has made attempts, at great expense, to establish a trans-Atlantic line of steam packets. The attempt has failed. The Hanse Towns, Denmark, and Sweden, also possess steamships, but only on a comparatively small scale. Greece and Turkey are far behind other countries in the possession of steam vessels. The Greeks, were their country and commerce in a flourishing condition, would, no doubt, manage steamships as ably as they certainly have their sailing vessels. The Turks have been clumsy mariners, and their few steam vessels are wretchedly managed. Of all Orientalists, the ruler of Egypt has made an extraordinary advance in the acquisition of powerful steamships.—In 1814, there was but one steamboat belonging to the British empire. During 30 years the number has increased to about 1000 British steamboats, which are now navigating all parts of the world.

In 1846, the British government employs a magnificent fleet of steamships, managed by, and belonging to, a private association, which sail, semi-monthly for eight, and monthly for four, months in the year, between Liverpool, Halifax and Boston. From Boston, the great means of intercourse, by steamboats and railroads, diverges to all parts of North America—extending to the furthermost of the great lakes, and up and down the navigable rivers, flowing from the Rocky mountains. Iron is made to swim, in the form of a ship (the Great Britain) exceeding 3600 tons burden, impelled forward from Liverpool to New York, against the currents, raging storms, and seas of the Atlantic, by an invisible power, moved by the resistless force of fire causing the expansion of water.

Another splendid fleet of steamships, belonging also to a private company, are employed by the government to maintain a monthly intercourse between the United Kingdom, by Southampton, and all the islands of the West Indies and the states of Mexico and South America.

A third and mighty fleet, belonging to a great company, and employed by the government. sails monthly from Southampton to the European peninsula, and by way of Gibraltar to Malta and Alexandria, with a branch to the Levant and Constantinople. The same company conveys the government mails and passengers by three of the most powerful steamships in the world, from Suez, down the Red sea to Ceylon, Madras, and Calcutta; and that company has contracted to extend the established chain between Southampton and India to Singapore and the Chinese empire, by the employment of several powerful steamships, nearly all constructed. This steam line between England and China, is now complete, by which we have received an English newspaper, printed at Hong Kong only 56 days before our having read it in London.

A British company has for some years established a line of steamers along the southern shores of South America; and the Hudson bay company have a steamship on the western coast of North America. The East India company employs one steamship in conveying mails between Suez and Bombay; and several steam vessels are employed in India, and

others in the Eastern or Chinese seas, by the British government, as vessels of war.—The following appears as the programme of the projected line of French steamships:

First great line—from Havre to New York. Four steamships are to be placed on this line; the departures are to take place once a fortnight. 15 days are allowed for each passage, and 10 days at New York—in all, 40 days. 20 days are to be allowed to each vessel at Cherbourg, between each voyage, to rest the crew, and repair the vessel and engines.

Three steamers are to be placed on this line; the departures are to take place once a month. Two days are allowed for the passage from Bordeaux to Corunna, and 10 hours' stay there; five days 12 hours for the passage from Corunna to Azores, and one day's there; 12 days 16 hours for the passage from the Azores to Martinique, the steamers to remain 10 days at Martinique—20 days allowed for the return passage from Martinique to Bordeaux—in all 40 days' sailing, and 11½ days stoppages. 37 days are allowed between every voyage, at Rochefort or Bordeaux, for repairs and stoppages.

Third great line—from Marseilles to Martinique. Three steamers are to be placed on this line; the departures are to take place once a month. From Marseilles to Barcelona, 1 day 4 hours' stay; from Barcelona to Cadiz, 3 days and 24 hours' stay; from Cadiz to Madeira, 3 days and 24 hours' stay; from Madeira to Martinique, 14 days. The steamer is to remain 10 days at Martinique. 21 days are allowed for the return voyage from Martinique to Marseilles—in all, 40 days' sailing, and 14½ days' stoppages. 33 days are to be allowed at Toulon or Marseilles, between every voyage, for repairs and repose.

Fourth great line—from St. Nazaire to Rio Janeiro. Four steamers are to be placed on this line; the departures are to take place once a month. From St. Nazaire to Lisbon, 3½ days, 24 hours' stay; from Lisbon to Goree, 8 days.—*Mining Journal.*

Production of Coal in the Different States of Europe.

After iron, there is certainly no produce of the mineral kingdom which exercises a greater influence on our commercial relations than coal.

The following is a statistical sketch of the produce of that article in the different countries of Europe.

England possesses the richest veins of coal, both as regards quality and quantity; they form a line from southwest to northeast. In Northumberland and Durham, from the Tweed to the Tees, coal abounds; at Whitehaven, in the hills of Cumberland, in Yorkshire, and in Lancashire. The most abundant mines are in Wales.

The consumption of coal in England and in exportation, is so great, that it has often been asked, if the mines would not be exhausted? but, according to calculations made in proportion to the present consumption, they could not be exhausted under 1500 years—the yearly consumption in Great Britain is 20,000,000 to 21,000,000 of tons.

The exportation increased in the following proportions: In 1830, 505,421 tons; in 1832, 588,450 tons; in 1834, 621,256 tons; in 1836, 1,401,000 tons; in 1838, 1,413,800 tons; in 1840, 1,621,300 tons; in 1842, 2,120,000 tons; and in 1844, 2,410,000 tons.

The number of miners exceed 500,000.

English coal is to be had in every part of the civilized world; there are deposits at Rio Janeiro, at Odessa, at Archangel, and at Constantinople.

France does not produce enough coal for her own consumption, and is obliged to import. She possesses 250 mines, of which 182 are worked, and which rendered in 1844, 72,000,000 cwts. of coal to the value of 21,000,000 fr. (£840,000.) The produce is increasing, as in 1815 they only rendered 17,000,000 cwts.; 40,000 men are employed in the mines, and traffic belonging to them. In 1842, the importation of coal into France, amounted to 16,718,328 cwts.

France imports her coal from Belgium, England, and the Prussian provinces on the Rhine.

Spain draws but slight profit from her abundant mines; the principal mine is the Sierra Morena, the produce is not known.—They import but little. In some of the principal Spanish ports, there are depots of English coal for the steamers.

In Portugal, there are depots at Figueres, at Coimbra, and near Oporto.

The principal mines of Italy, which produce annually from 140,000 to 150,000 cwts. are in the Savoy, and near Genoa. The others, scattered over the peninsula, are of little value, and there are depots of English coal in the principal ports.

Belgium possesses immense mineral riches; in this country production increases. In 1831 the produce amounted to 22,800,000 cwts., and in 1844 it reached 84,232,420.—In 1844, the exportation amounted to 1,050,000 tons, a value of about 6,000,000 florins (£600,000).

Holland has no coal mines. There is a single mine in the country of Limberg.—They import all their coal from England, Belgium, and the Prussian provinces.

Switzerland, though rich in metals, has very little coal, and imports a quantity from England. The only mine of any value in this country is at Hochefeld; in 1843, it produced 514,969 cwts.

Norway has no coal mines. In Russia the production of coal does not exceed 800,000 punds. It seems that between the Don and the Dnieper, and in Siberia, there are rich coal mines, and the government are now taking measures to turn them to account.

Denmark has one insignificant mine at Bornholm, and imports nearly all her coal from England.

Austria is rich in coal mines, but the produce is not in proportion with the number of her mines. The annual produce of coal in Austria is at least 12,000,000 cwts.: in 1843, it did not exceed 9,000,000. Of this amount Bohemia produces about one-half; Moravia, 2,000,000; Austria, 1,500,000; Styria, 1,000,000: Carinthia and the districts of Ogragno, a little more than 500,000; Hungary, 600,000; the coast lands (Kusten-land), 60,000; Galicia, 3,000; Lombardy, a very small quantity.

Coal mines exist in nearly every province of the monarchy. In Bohemia there are veins of this mineral along the river Beraun, in the north of the districts of Klattan, Pisen, and Rakovits, to the neighborhood of Prague. There are coal mines in the Erzgebirge, in the valleys of the Eger and the Biela, and at the foot of the Riesengeberg, from Sehatzlar to Landskron.

The principal mines of Moravia are in the district of Brunr, near Rossitz and Oflovon, and the coal near the mouth of the Oder is of a superior quality. In the Archduchy there are mines near Wiener, Neustadt, Klingenfurt, Gubach and Gloggnitz; in Styria, near Leoben, and Fohnsdorf; in Carinthia, in the valley of the Lavan, and in the neighborhood of Prevali; in Dalmatia; in Lombardy, in the districts of Oome and Pavia; in Tyrol, near Haring, and in Hungary, in the Carpathian mountains.

In 1844, Austria exported 773,065 cwts., of which 702,262 cwts. were sent from Bohemia by the Elbe to Saxony, 25,433 cwts. to Turkey, 23,210 cwts. to southern Germany, and 20,542 cwts. to Prussia.

Prussia possesses 540 coal mines, giving employment to 25,000 workmen. The produce in 1844 amounted to 53,000,000 cwts., or a value of 4,500,000 dollars (£675,000). In 1841, Prussia imported 3,864,944 cwts., principally imported England. Her exportation was 6,903,473 to Holland, France and Poland.

In Bavaria, the produce is not what it might be; there are 40 extensive coal mines, principally in her Rhenish provinces, the produce is about 1,200,000 cwts.

In Saxony, the mines are worked with zeal—the produce amounts to about 4,000,000 cwts.

There are extensive mines near the forest of Thuringen.

The Grand Duchy of Baden possesses some valuable coal mines.

In the Duchy of Brunswick there is scarcely a mine.

In the kingdom of Hanover there are coal mines which occupy more than 1,000 workmen.

Wurtemberg is poor in this respect. The Grand Duchy of Hesse, the Duchy of Nassau, the Grand Duchies of Mecklembourg and Olembourg do not possess coal mines.—In the Electorate of Hesse there are some valuable mines, producing annually about 900,000 cwts.

Generally speaking, the production of coal in Europe is susceptible of being greatly developed, especially in some parts of the Austrian dominions. It is true, that during the last few years, much has been done, but there is still much more to do.

The produce of coal in Europe amounts annually, on a rough calculation, to 120,000,000 fl., or £12,000,000 sterling.

English Iron Trade.

PER GREAT WESTERN.

FROM LONDON MINING JOURNAL,

MAY 22, 1846.

We learn from our letters of the 29th May that the iron trade feels the effects of the great demand for money. Rails were quoted at £9 10s. and merchant bars at £8 at Cardiff.

	£.	s.	£.	s.	d.
Bar *a* Wales—ton	8	0—	8	5	0
" London	9	0—	9	5	0
Nail rods	0	0—10	0	0	
Hoop (staf.)	11	0—11	5	0	
Sheet	0	0—12	5	0	
Bars	10	10—11	0	0	
Welsh cold blast foundrey pig	4	5—	5	0	0
Scotch pig *b* Clyde	0	0—	3	10	0
Rails	9	10—	9	15	0
Russian, CCND *c*	0	0—16	0	0	
" PSI	0	0—16	0	0	
" Gourieff	14	5—14	10	0	
" Archangel	0	0—13	12	6	
Swedish *d*, on the spot	0	0—11	10	0	
" Steel, fagt	0	0—15	5	0	
kegs *e*	14	5—14	10	0	

From our correspondent.

We have no alterations to notice—prices remaining the same as quoted in last week's *Mining Journal*. The metal market generally is very dull, and the accounts just received from India will probably deter the principal buyers from making purchases at present.

From a correspondent.

English bar iron continues inactive, but for rails there are a few inquiries. Scotch pig has not been so active this week; sellers from 70s. to 72s. 6d. per ton at Glasgow, according to Nos. Swedish iron and steel continue dull of sale.

Glasgow Pig Iron.—May 15.—There have been few transactions in pig iron this week, from holders being very firm for higher prices, and which buyers are unwilling to give, unless necessitated to purchase. The principal sale during the week was 2,500 tons (3-5ths and 2-5ths,) at 72s. 6d. per ton, cash, for iron in store. We quote the price 69s. to 70s. for No. 3.; 72s. 6d. for proportions of Nos.; and 73s. to 75s. for No. 1.

Iron Market-house.—The Glasgow papers describe an iron market-house for Honduras, that has just been completed by Messrs. Edgington, of Glasgow.—It "measures 108 feet long and 60 feet wide, and is surrounded by a colonade or verrandad 12 feet wide, supported by handsome fluted columns. The interior or main building contains numerous stalls for the sale of the various market commodities, and is ventilated by means of jalousie blades, fixed in the manner of Venetian blinds. There is besides a ventilator on the top, that nothing may be wanting to encourage a delicious coolness in the hot climate for which it is intended."

Reading (Official) Railroad.

A comparative statement of the business on the Philadelphia and Reading railroad for the week ending

	June 8th, 1844.	June 7th, 1845.	June 6th. 1846.
Travel	$1,777 70	$1,968 89	$3,115 59
Freight on goods.	700 23	1,466 91	3,882 83
Do. do. coal..	8,906 33	19,036 55	36,235 25
Miscell's receipts.	....	....	....
Transp. U.S. mail.	....	....	....
	$11,384 26	$22,472 35	$42,233 67
Coal trans., tons..	9,085	19,241	29,237

New York and Erie Railroad.—The revenue of the eastern division of the New York and Erie railroad for the eight months ending May 31, 1845 and 1846, were as follows:

	1845.	1846.
From freight	$64,352 12	$69,150 37
" passengers	35,332 53	42,098 43
Total	$99,684 65	$111,248 80
		99,684 65
Increase		$11,564 15

On the 1st of April, the passenger fare was reduced 30 per cent. or to less than 2 cents a mile. This was followed in the two next months by an increase of more than 16 per cent. in the passenger receipts. The business of the road is steadily increasing, and the estimated receipts for the next 4 months will probably be considerably exceeded. About 35,000 quarts of milk are daily brought over the road, from Orange co. to this city—and just now, Rockland co. sends every night from 30 to 40,000 baskets of strawberries. An extra train is run to accommodate this trade.

☞ We learn that the New Jersey railroad company have reduced their fare on through passengers from Trenton, having commutation tickets from the Camden and Amboy company. The charge now is 75 cents instead of $1 25. The Eastern company have thus followed promptly the reduction made by the Camden and Amboy company, and are entitled to their proper share of praise.

Any person who travels from Trenton to New York and back twice, will save money by buying a commutation ticket, which will enable him to cross the road eight times.

The first two trips will then cost us as follows:

Commutation ticket	$5 00
Transit duty, 4 times	40
N. J. Railroad, 4 trips	3 00
	$8 30

The best of a trip to New York and back, to persons purchasing a single ticket at the old rates, is $5—and two trips costs $10. Eight trips, at $5 each, will cost $40; but if made under a commutation ticket, they will cost $11 80. The saving by them will be $28 20, showing a reduction of more than two-thirds from the old rates.—*Trenton Gazette.*

New York and Boston Railway.—The charter reported to the Connecticut legislature by the committee on railroads, provides for a railway, with a single, double or treble track, from New Haven to the state line, through Middletown, by the name of the Boston and New York railroad. The capital stock is to be two millions of dollars, in shares of $100 each, with liberty to increase it to three millions.—They have power to cross the Connecticut on a viaduct with a draw of at least 85 feet, to be constructed under the direction of three persons appointed by the superior court; the draw to be kept open at all times, except when trains are passing. In case of unnecessary detention, the company are to pay a fine of $1000. The owners of vessels not liable for damage done to the viaduct unless it be negligent or malicious. If $500,000 be not expended within three years, or the road constructed in six years, the charter to be forfeited.

The bill passed the house of representatives on Saturday, by a vote of 116 to 80—majority 36. It is believed that there will be no strenuous opposition to its passage in the senate.

Railway on the Canal Tow-path from New Haven to Collinsville.—The bill for chartering this road which passed the Connecticut senate a few days since, on Friday received an almost unanimous vote in the house in its favor, and only awaits the signature of the governor to become a law. This bill increases the stock of the company $900,000, providing that $200,000 shall be subscribed before the road is commenced, and $100,000 expended in eighteen months—shares increased to $100 each.

Reduction of Fare.—We understand the fare, on Monday next, from Springfield to New York, will be reduced to $2 75; from Hartford to New York, $2; and between New Haven and New York, $1. These prices are reasonable enough, and we trust the travel will be largely increased on this justly popular route.—*Hartford Times, June* 12.

Connecticut Valley Railway.—The committee on railways in the Connecticut legislature, on Friday, reported a bill authorizing the construction of the Connecticut valley railway.

Pittsburg and Connelsville Railroad.—we learn from the Pittsburg papers that the six thousand shares of stock which the commissioners were authorized to take, have been all subscribed.

Railroad Iron.—During the month of May, the rolling mill of the Montour iron company at Danville, Pa., made 796 tons of railroad iron.

Ogdensburg Railroad.—The Ogdensburg railroad company was organized on Tuesday, June 2nd, at Ogdensburg, by the choice of the following board of directors: George Parish, Anthony C. Brown of Ogdensburg, N. Y.; John L. Russell, Canton, N. Y.; Hiram Horton, Malone, N. Y.; Lawrence Myers, Plattsburg, N. Y.; Charles Paine, Northfield, Vt.; (president of the Vermont, Central railroad co.;) S. S. Lewis, T. P. Chandler, Wm. F. Weld, Thomas Lamb, Benj. T. Read, Boston; Isaac Spaulding, Concord, N. H.; S. F. Belknap, Windsor, Vt.

George Parish was elected president, and Sam'l H. Walley, Jr., treasurer of the company.

The following gentlemen were on Thursday last, elected directors of the N. J. railroad and Transportation company for the ensuing year; Stephen Whitney, Abraham G. Thompson, Wm. Sam'l Johnson, and J. Philips Phœnix, of N. Y. John S. Darcy, D. S. Gregory, Adam Lee, John Acken, and John P. Jackson, of New Jersey.

Improved Railway Whistle.—The *Censeur de Lyon* proposes as an improvement in railway whistles (which as now made, stun passengers with their frightful noise—while the driver of an approaching train cannot hear them when the wind is unfavorable,) to attach to them by a swivel connection, a kind of speaking trumpet, by the turning of which the sound can be conveyed in any direction, and to a much greater distance than by the present mode.

A Musical Bed.—The last novelty from Germany is a musical bed which receives the weary body and immediately "laps it in elysium." It is an invention of a mechanic in Bohemia, and is so constructed that by means of hidden mechanism, a pressure upon the bed causes a soft and gentle air of Auber to be played, which continues long enough to lull the most wakeful to sleep. At the head is a clock, the hand of which being placed at the hour the sleeper wishes to rise, when the time arrives, the bed plays a march of Spontoni, with drums and cymbals, and in short, with noise enough to rouse the seven sleepers.

Connecticut River Railroad.—The following gentlemen were elected directors of this road at the annual meeting in Boston, on Wednesday: E. Hopkins, Northampton; E. H. Robins, J. K. Mills, S. Henshaw, Boston: John Chase, Cabotville; F. Ripley, Hartford; H. W. Clapp, Greenfield. Erastus Hopkins was re-elected president of the corporation and Sam'l F. Lyman, clerk and treasurer.

Shamokin Furnace.—The anthracite furnace at Shamokin, recently leased by Messrs. Bryant and Wood, was successfully blown in last week, by Mr. Bryant, and is now turning out iron of an excellent quality. Mr. Bryant is a practical man, and is the second American who has succeeded in blowing in anthracite furnaces in this country. Mr. Charles Henderson at the Valley furnace, was the first.—*Miner's Journal.*

☞ The St. Louis New Era keeps up its fire at those who are opposed to internal improvements.—The west will now suffer, as it little expected to do, from the effects of war upon the sea ports.

"The present state of trade furnishes a powerful argument in favor of lines of railroad from the valley of the Mississippi to the Atlantic. A slight war with a feeble nation has thrown the commerce of the west in a state of ruinous confusion. This is owing to the fact that our heavy produce must pass through the Gulf of Mexico, and be subjected to the risks and hazards of war. If we had good railroads to the east, the commerce of the west would not be thus injured and prostrated. Internal lines of communication would render us more safe and independent. The alarm and panic of war would be stripped of a part of their terrors by the construction of railroads to the Atlantic."

"The bill to authorize the construction of a railroad from Galena to Chicago is still before congress. It is charged that Mr. Hoge, the member of congress from Galena, is opposed to it, and that this will cause its defeat. This would be as blind an act on his part as was that of certain members of congress from Missouri, who voted against the bill to remove the snags from the Missouri and Mississippi rivers."

Correspondents will oblige us by sending in their communications by Tuesday morning at latest.

PRINCIPAL CONTENTS.

Mathematics as a branch of professional study. 388
Steam navigation—its power and importance... 390
Production of coal in the different states of Europe 391
English iron trade 392
Railroad receipts 392
Miscellaneous items 392
A through ticket between New York and Washington at five dollars 394
Railroad locks 394
New York and Erie railroad 394
The "Herron Track" 394
Magnetic water gauge 395
The railway king 395
A Hindoo gentleman's opinion of railway travelling 396
Description of a water wheel 396

AMERICAN RAILROAD JOURNAL.

PUBLISHED BY D. K. MINOR, 23 Chambers street, N.Y.

Saturday, June 20, 1846.

A CARD.

TO THE CITIZENS OF NEW YORK.

After a residence of over *twenty-one* years in this city, I find it for my interest to seek, in a neighboring city, a new home, where I hope to derive more ample reward for honest and unremitting industry; and enjoy the satisfaction of knowing that my past labors have contributed somewhat to the general prosperity, if not materially to my own.

Having, for so long a period, participated in the excitements and activity of this growing city, and witnessed its prosperity and rapid advancement—yet without sharing largely in its enjoyments—I cannot leave it without regret, nor without acknowledging my obligations, and gratitude, to the many kind friends, who have at all times cheered and encouraged me on; but more especially to those *few* who so generously sustained me at a period when all was lost, save a determination to succeed. Here I have catered and labored for the general prosperity; and have the vanity to believe that the great destiny that awaits you has not been retarded by my efforts; *there* I shall provide the comforts required by the body—and therefore solicit in my new habitation, and new vocation, a continuance of your approval, and an increase of your patronage. I shall feel, while I labor for the wants of the outer man—while I provide and supply, in a superior manner, the comforts and social enjoyments of life—that I am but "laboring in the vocation" that contributes "the greatest good to the greatest number."

In the "FRANKLIN HOUSE," Philadelphia—my new residence after the 1st of July—I hope to meet many of those faces which, during a long residence here, have become familiar to me, and grasp many an honest hand, and exchange many a kind salutation, with warm and sincere friends of my early days.

I have taken the well known FRANKLIN HOUSE, 105 Chestnut Street, Philadelphia, heretofore kept by Messrs. J. M. SANDERSON & SON, which is now undergoing a thorough renovation, and extensive improvements, by the addition of a convenient and well arranged *ladies ordinary*, a spacious new dining room for gentlemen, several new parlors, and many new and convenient lodging rooms. It will be entirely repainted, and mainly refurnished, and thus be placed on a footing with the best hotels in Philadelphia. I shall be aided in its management, by Mr. James M. Sanderson, long favorably known as one of the gentlemanly proprietors of the FRANKLIN HOUSE, and as a caterer unsurpassed in the country; and also by the celebrated Chef de Cuisine PELLETIER, also connected with the house during the past four years, and whose superior, as an artiste, in his line, in this country, *is yet to be found.*

With such a house, and such aid in its management, I do not hesitate to say, to those friends and acquaintances who have known me during the past twenty years, and to others who have not, that they will find good accommodation, good fare, and all desirable attention to their wishes when they call at the FRANKLIN HOUSE, and upon their obedient servant,

D. K. MINOR.

THE RAILROAD JOURNAL will hereafter be published *simultaneously in* NEW YORK and PHILADELPHIA. The editorial department will as heretofore, be under the direction of the subscriber, aided by his former associate Mr. George C. Schaeffer, and other gentlemen of ability connected with the profession—and renewed efforts will be made to render it *more* worthy of the rapidly increasing support which it is now receiving.

Engravings and illustrations will be more frequently given, and expensive maps will be occasionly prepared, showing the progress of the railway system, one of which, showing the proposed route of steam communication from China, across the isthmus, and through the United States. to England, by Edward McGeachy, Esq., of Jamaica, is now in the hands of the artist, and will be ready in a few weeks; and others will follow.

☞ The office in NEW YORK will remain for the present, at 23 Chambers street, and be in charge of Mr. Egbert Hedge, long connected with the work—who is authorized to transact business for me.

☞ The office in PHILADELPHIA will be at the FRANKLIN HOUSE, 105 Chestnut street, under the direction of the editor and proprietor, where all *letters*, and *communications* by mail, and all *exchange papers* and *periodicals* be hereafter addressed may to

D. K. MINOR.

☞ The editor of the Railroad Journal presents his compliments to his numerous subscribers and friends and assures them that he will be always gratified to see them at his new office and home, the FRANKLIN HOUSE, late SANDERSON'S, 105 Chestnut street, Philadelphia. He will be found *at home.*

Triger's Condensed Air Apparatus.

The new method of working under water, described in a late number of the Journal, has, in the hands of its inventor, Mr. Triger, been applied on a more extensive scale, with the best results. Mr. T. now suggests the very application proposed by us, viz: building of piers, etc., and particularly insists upon the reduced expense.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston,

on the arrival of the boats from Wilmington, N. C., in connection

with trains on the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily $26 50
Fare through from Charleston to Huntsville, Decatur and Tuscumbia 22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

1y25 JOHN KING, Jr, *Agent.*

RAILROAD SCALES.—THE ATTENtion of Railroad Companies is particularly requested to Ellicotts' Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of **20** years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers or fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st.
Office, No. 3 North 5th street,
1y25 Philadelphia, Pa.

MARAMEC IRON WORKS FOR SALE. By Authority of a power of Attorney from Messrs. Massey and James, I will sell at Public Auction, at the Court House in the city of St. Louis, on *MONDAY, the 2nd day of November next*, the above named valuable IRON WORKS—together with **8,000** ACRES OF LAND, more or less, on which there are several *valuable and productive Farms* open and in cultivation.

The Maramec Iron Works are situated at the Maramec Big Spring, in Crawford Co., Mo., and consist of **1** BLAST FURNACE; **1** AIR FURNACE; **1** REFINING FORGE, with large Hammer for making Blooms and Anchonies;

2 CHEFFERY FORGES for Drawing Bar Iron;
1 ROLLING MILL for Rolling Blooms into Bars and Plates;
1 SAW AND **1** GRIST MILL,

All within 300 Yards of the head of the spring. There are 2 large frame Coal Houses, and all other Buildings necessary, such as Shops and Houses for the workmen.

This Spring is one of the largest in Missouri, discharging at the lowest time 7,000 cubic feet of water per minute. The Ore Bank from which the Ore has been heretofore taken is about 600 yards from the furnace; it is the *Specular Iron Ore*, the best for making Bar Iron, and the quantity inexhaustible.—It is an Iron Mountain, 400 feet above the level of the Maramec River; the ore is entirely uncovered, and there is an easy descent and a good road from it to the furnace.

The lands have been carefully selected by one of the owners with a view to the interest and convenience of the Works, and are situated principally on the Maramec River and its tributaries, embracing the best bottom lands and water powers. The following detatched tracts, comprized in the above quantity, were selected for the advantages they possess;

183¼ ACRES in T. 40 N. of R. 8 W. in Sec. 3, near Wherry's Mill, in Osage Co.; entered to secure a very valuable Mill power on the Branch Spring and a good landing on the Gasconade River.

80 ACRES on Benton's Creek, 12 miles from the Works; entered to secure an extensive and valuable Ore Bank 2½ miles from the Maramec, at a point where there is ample water power.

320 ACRES in T. 38 N. of R. 4 W. in Sec. 22 and 28, affording an extensive and valuable water power on the Maramec river.

160 ACRES in T. 37 N. of R. 3 W. in Sec. 4, embraces two inexhaustible and valuable Ore Banks and is 1¼ miles from Water power sufficient for a furnace and Grist Mill, and is distant 6 miles from the above site on the Maramec.

80 ACRES in T. 37 N. of R. 8 W. in Sec. 33, including an extensive bank of excellent Ore, and distant 1¼ miles from water power on the waters of the Gasconade River, in Pulaski Co., sufficient for Furnace and Mills. All those Banks are of the same kind as the one at the Works, and deemed inexhaustible.

1 LOT, containing nearly one Acre, on the South Bank of the Missouri River, 4 Miles above the town of Hermann, purchased for a warehouse and

landing, and is one of the best landings on the River.

The lands above described are well timbered, and have been selected with a view to have an ample supply of wood and coal, for fences, building and other purposes. There are on the land valuable quarries of Limestone well adapted for Fluxes for the Ore, and also good quarries of Rock suitable for building. There are also on the land a great number the finest kind of Springs. A large portion of the lands are bottoms well adapted to the production of Corn and other crops. The Works are situated in a very pleasant and healthful part of the country. The Maramec ore is believed to be admirably adapted to the manufacture of steel.

A further description of the property at this time is considered unnecessary, as those wishing to purchase will no doubt view the property, which will be shown by the Agent, residing at the works.

The terms of payment required will be one-third of the purchase money in hand and the balance in three equal annual payments, secured by mortgage on all the property.

A more particular description of the property will be given, and further conditions of the sale made known, on the day of sale.

JNO. F. ARMSTRONG, Agent.

St. Louis, June 6, 1846.

☞ The Louisville, (Ky.,) Journal, Cincinnati Gazette, Tribune (Portsmouth, O.,) Nashville Whig, Pittsburg Gazette, National Intelligencer, United States Gazette, (Phila.) Railroad Journal (N. Y.,) and Boston Atlas, will publish the above once a week until the 20th day of October next, and send bills to this office for settlement, and *mark price on first paper*. 18t25

A Through Ticket Between New York and Washington at Five Dollars.

We some time since made a suggestion on this subject in our columns, and are surprised that a measure which would afford so great an accommodation to the public, and at the same time increase so much the profits of the railroad companies, has hitherto attracted so little attention on the part of those who conduct them. It appears to us obvious that with the present facilities for visiting Washington, a reduction of the rate *on through tickets*, to persons going direct from New York to Washington, would lead to an immense travel and consequent increase of receipt to the companies interested on this branch of their business. A traveller may now leave New York at 4½ P. M., be in Washington by 9 A. M. the next morning, attend to business at the departments, and afterwards attend a debate in the house of representatives or the senate, and leaving Washington at 5½ P. M., be in New York by 12 M. the next day, thus losing only *one* business day for the trip. But the expense of paying the full fare on each road is too great for persons to incur, unless for objects of *great* moment, and thus the companies lose the benefit of that much larger travel, which for slight considerations of business, or merely for pleasure or curiosity would take the journey. We would respectfully draw the attention of their directors and stockholders to this subject. We are convinced at the rate suggested by us, which would give $2 to the road between this city and Philadelphia to that between Philadelphia and Baltimore, and $1 to the Washington road, that an immense travel between the political and commercial metropolis of the union, would be put in motion; while on the other hand, should no such measure be adopted, we feel equally well satisfied that the growing use of *the magnetic telegraph* will eventually impair the present receipts of the companies from the travel in question.

We would not, in what we have above said, be understood as assenting to the expediency of the present rates on other travel. On the contrary, we believe that a charge of $2·50 between New York and Philadelphia, the same between Philadelphia and Baltimore, and $1·25 between Baltimore and Washington, would be a more productive one to the companies than ther present rates, but the case is much stronger with regard to the description of travel which would exist *Between New York and Washington*, which it will require low rates *to set in motion*, but which would, we are satisfied, be set in motion to an immense extent, if the suggestions we have ventured to make on the subject were adopted.

Railroad Locks.

The use of locks, or dry locks, as they are sometimes called, upon railways, is by no means a new thing. Still, as far as we can learn, this contrivance has been but little employed, although it dates back farther than almost every other railroad invention. Our object in noticing it at present, is to record its re-introduction in France, at the coal mines of Decize.

The advantages claimed for this mode of construction are as follows:

Great elevations can be overcome within a small space, sudden rises of ground are met at once, and the heavy excavation and embankment, usual at such points, are dispensed with. The long rope, signals, etc., of inclined planes, are not needed, and the risk of accident greatly decreased. The cost of construction and repairs are far less than on inclined planes.

It is not intended that these locks should be used on lines of quick travel, but rather for heavy trains moving at moderate rates. The application to coal and iron roads penetrating a mountainous region, is too obvious to need illustration.

New York and Erie Railroad.

Extract from a letter of a correspondent, dated June 7th, 1846:

"I am engaged now in making some surveys for the commissioners appointed by the last legislature to locate portions of the Erie railroad in the vicinity of Sullivan county. These surveys will extend over a section of country about 40 miles square, where are presented not only great obstacles to the construction of a railroad, but also to that rigid examination which the interests of the company and the interests of the inhabitants of this county alike require. Two parties are engaged at present in field operations, under the general supervision of Henry Tracy, Esq.; two parties on the interior route, and two on the Delaware or Pennsylvania route. A most commendable disposition is evinced on the part of the commissioners to have the question of location settled at the earliest practicable day, and it scarcely admits of a doubt but that immediately following their decision, preparations will be made by the Erie railroad company for placing the work under contract.

"Very respectfully, your obedient servant."

"Herron Track."

FALLS OF NIAGARA, *June 2d*, 1846.

D. K. MINOR, ESQ.

Dear Sir: Having had repeated applications for copies of the president of the Reading railroads' letter, on the merits of the "Herron Track," which I find it very inconvenient to supply, it has been suggested that I could serve all who are interested in its perusal, more effectually, by sending you a copy at once for insertion in the Railroad Journal, which is now so universally read by all who are any way interested in the subject of railroads.

Mr. Tucker's letter, which you read as I passed through New York, and of which I enclose you a literal copy, has been pronounced in State street, Boston, where the writer is well known, and the subject of railroads also well understood, to be full, circumstantial, and evincing close observation combined with an intimate knowledge of the subject upon which he wrote, which, it was remarked, accounted in a measure for his very successful management of the Reading railroad. Indeed it is pronounced excellent; and an engineer who has been opposed to my plan, remarked that more could not be said. Yet I know that Mr. Tucker, true to his well known character for caution and prudence, has kept far within the limits which the facts in the case would warrant. It should be borne in mind that this comparison of the "Herron Track" is not made with a track of inferior construction, but with one of the best tracks in the union. For such is the Reading railroad. Yet Mr. Tucker states, that during the transportation of 1,100,000 tons of coal, the cross-tie track, along side of it, used for taking back the empty coal cars, cost materially more for adjustment than the "Herron Track," which bore the same engines and cars loaded with eleven hundred thousand tons (of 2240 lbs.) of coal. The merchant freight and passengers being about equal on both tracks.—under such circumstances, the "Herron Track" did not actually cost one-half for adjustment. And I feel perfectly safe in asserting that the best railway track I have seen in New England, or elsewhere, costs more for repairs and adjustments in a single year that the "Herron Track" would in three years, and in some cases than it would in five years, laid on the same soil, and with the same actual trade.

At the date of this letter, the coal trade that has passed over the Herron track, of the Reading railroad, exceeds 1,220,800 tons.

It has been remarked that the heavy coal trains ran at much greater speed on the Herron track than elsewhere on the road, owing to the superior evenness of surface. Consequently, the engines would have drawn a proportionably greater load at the usual speed. Or the same work could be done with a much less consumption of fuel. Mr. Tucker informed me that he purposed noticing this fact, but omitted it accidentally. It is one of great importance, however, as I estimate the saving that would have resulted to that company last year, in fuel alone at $29,741; and this year, at about $44,600. Besides which there would have been a saving in the wear and tear of the cars, engines, and track, last year, of about $100,000; which with the increased trade of the present year, would amount to $150,000. To which add the saving in fuel, and from waste coal, and accidents, would in the aggregate amount to $200,000.

I will close these remarks with the observation, that Mr. Tucker's doubts in regard to the facility with which the string-pieces can be replaced, are regarded by the ablest superintending engineers of the best managed railroads in New York and the eastern states, to be entirely unfounded. Yet they serve to show, in an eminent degree, the circumspection with which Mr. T. has examined this improvement in all its details, before giving it his sanction.

I have the pleasure to add that the "Herron Track" will shortly be introduced on several of the most important and best managed roads in the union, where everything which engineering skill, and the most efficient system of management has, evidently, been bestowed in maintaining the present track.

As I am much called on for estimates of the track, I beg leave to append one.

Very respectfully yours, etc.,

JAS. HERRON, *Of Philadelphia.*

Estimate of the quantity of materials, and probable cost of constructing one mile of "Herron Track," exclusive of the iron rails, but with all the fastenings and workmanship to secure them.

538 string pieces, 20½ ft. long, 5 x 7 inches = 36,080 feet	
2112 trellis sills, 14½ feet long, 3 x 8 inches = 61,248 feet	
Sound hemlock timber, 97,328 feet at $5 =	$486 64
4224 engine turned white oak tree-nails, 16 inches by 1½ inch, at 2½ cents.....	105 60
6336 boat spikes, 7 in. long = 1500 lbs. at 4½ c.	63 75
Preservation of the timber with chloride of zinc.....	245 00
Cost of the materials in the frame work of track.....	$900 99
Fastenings for Iron Rails.	
528 patent wrought iron joint chairs, at 5 lbs. = 2640 lbs. at 6 cents.....	158 40
8100 railway spikes 2700 lbs. at 4½ cents...	114 75
Workmanship, in which all charge for the use of the patent will be, for the present, merged	800 00
Cost of the track, exclusive of rails.....	$1,974 14

Note. Fifty pound rails laid on the Herron track will make a much better and more durable track than 75 pound rails laid on cross sills, and the difference of cost in the weight of iron alone, even supposing it to be bought at $60 per ton, will more than pay for laying the Herron structure with preserved timber, without taking into account the chairs, spikes, sills, and workmanship required to lay the 75 lb. rails: thus

117·75 tons of rails, at 75 lbs. per yard, at $60 per ton, is.....	$7,065
78·5 tons of rails, at 50 lbs. per yard, at $60 per ton, is.....	4,710
Difference in the cost of the rails alone....	$2,255

J. H.

Office of the Phila. & Reading R. R. Co.
Philadelphia, May 2d, 1846.

Jas. Herron, Esq., C. E.

Dear Sir: In reply to your request that I should give an expression, in writing, of the views I have formed in relation to the merits of your patent railway track, which has now been in use for about a year and a half, for three miles, on the main line of the road, I will briefly state a few prominent facts.

1st. The part of the road which was selected for the experiment, with your concurrence, was such as would fully test the usefulness of your plan. Your track is laid, in part, on a soil of clay, and through a long, deep and wet cut, with much curvature of line.

2d. The track has had passed over it upwards of 1,100,000 tons of coal, besides all other down freight and passengers. It has maintained a more perfect level than the track laid with cross-ties on broken stone. It has cost less for adjustment than the average expense on the whole road, and materially less than the three adjoining miles of track laid on cross-ties, although the latter was used for the passing the empty coal cars and the merchandize and passengers from Philadelphia.

3d. You opened your track for the heavy trade of the road before the frame work was filled in throughout with earth, and while the road bed in the deep cut was in a bad condition, being frequently inundated with water. You were confident that no injurious consequences would ensue to the structure, and the result has proved the correctness of your opinion.

It has frequently been suggested that the frost would throw your track out of line and level, and break the trellis pieces. This apprehension was not well founded, as such injurious consequences would have soon appeared in the deep cut to which I have alluded. On the contrary, the level of your rack has been particularly good, and I am not aware that a single piece of timber has been broken.

4th. The joints of the rails are more perfect than on any other plan of superstructure that I have noticed.

5th. The question arises as to the practicability of making repairs without interruption to the business on a road, when so many trains are constantly passing, when the resources of that section of the country are more fully developed. Thus far, with a business frequently of more than 4500 tons per day, not the slightest interruption has been known. It is probable, however, that the business will soon be nearly doubled. I am satisfied that the trellis pieces can be removed and replaced with facility, but I have doubts in regard to the rapidity with which the string pieces can be removed. In theory, your plan of replacing the latter seems to be very feasible, but as the track must *always* be ready for the passage of trains which may arrive five minutes apart, I think you would encounter practical difficulties if the removal of the string pieces cannot be avoided by kyanizing the timber. I believe, however, that a string piece can be taken out and replaced with another in fifteen or twenty minutes in such a manner that trains could pass over it with safety. Therefore, on most roads this would be a matter of but little importance. Of course I cannot now express an opinion, founded on any experience, as to your success in attempting to preserve the timber by kyanizing it. As the timber used in your structure is more expensive than in most others, the question of its durability becomes one of importance.

I think there is sufficient evidence to warrant the conclusion, that your process for rendering the wood very durable will be quite successful. This can only be tested by time, and if the result is such as I hope and expect, I shall feel confident that the repairs to railroads and railroad machinery may be materially diminished by adopting your plan of track.

In conclusion, I have the pleasure to repeat the assurance I have verbally made to you, that your track, thus far, has been fully equal to your representations at the time we decided to test it.

I remain, dear sir, very respectfully, your obedient servant,

John Tucker, *President.*

Magnetic Water Gauge.

The invention recorded below is not new, in principle at least—a similar contrivance was proposed to the U. S. commissioner, appointed several years since, for the purpose of examining into the means of preventing the rupture of boilers. It was then determined that the action of heat upon magnets, the presence of large quantities of iron in their immediate vicinity and the extreme delicacy of construction required for the free action of the needle, would prevent all reliance upon methods in themselves ingenious.

We make this criticism with a view to prevent useless experiment and cost. The inventor might have saved himself the expense of patents in Europe, as he will probably never make of his invention an amount equal to the moderate charge for a patent in this country.

Magnetic Water Gauge.—This is the name of a new instrument, invented and patented by Mr. George Faber, of Canton, O., for the purpose of showing the exact height of water in the boiler or boilers of a steam engine. It is undoubtedly one of the simplest applications of a scientific principle we have ever noticed. The instrument itself is of the simplest construction, calculated to endure a great deal of service without getting out of order. We cannot give a technical description of it, we will endeavor to write a popular one.

The principle is, that a magnet will effect substances through a solid body. The instrument is composed of a flat cylindrical brass box, in two pieces, united by a screw. On the face of the box there is painted a dial, resembling a clock face; with numbers from 1 to 18. A needle is suspended on this. In the inside of the box, but in no way connected with the needle, there is a magnet, itself fitted on the end of a brass rod extending into the boiler. On the end of the rod in the boiler, there is a copper pulley wheel, with grooves on the edge, around which a brass chain traverses, with a brass and copper ball—one at each end. The latter is about six inches in diameter, hollow, and floats upon the water. It is by the rising or sinking of this latter that the instrument operates. As the water falls the grooved wheel turns, and with it the rod, its axle, and with the rod, the magnet in the box. There is no connection between the magnet and needle, but the former operates upon the latter through the solid brass, and causes it to indicate the exact number of inches of water in the boilers.

The whole affair is a simple and beautiful application of a well known principle to a new purpose. So far as we can see, it will answer every expectation. A child that can tell the hours by the hands of a clock, can also tell the quantity of water in a boiler by this instrument. It is a most ingenious piece of mechanism, and can be afforded cheap.—Mr. Lewis Vail, the sole agent of the patentee exhibited one of them to us, and we also saw one in operation upon the boilers of Messrs. E. & F. Faber, fifth ward. The inventor is a brother of these gentlemen. We advise all who are interested or curious in such matters to call at their works and see it.

We understand that patents have been taken out in Europe for it. A patent was granted for it by our government November 26th, 1845. Gentlemen of the highest scientific attainments have spoken very favorably of it. If we are not much mistaken, it will come into universal use.

The Real Railway King.—A gentlema in the Queens Bench has papered his room with nothing but railway shares. The effect is very rich. It is calculated that not less than three millions of capital has been sent in this way to the wall. Every county in the United Kingdom is there represented. The whole railway world is compressed into the space of eight feet by six. The gentleman breakfasts in England,

takes his tiffin in India, dines at Paris, and sleeps in Switzerland, just according as he moves his chair. We must not forget to mention that every share has been made to run in the direction of the fire-place. In this way the flue ingeniously represents the grand central terminus of all the lines in the world.—*Punch.*

A Hindoo Gentleman's Opinion of Railway Travelling.

"You doubtless have heard and read of railways, though perhaps you cannot form any conception of them. It was on this occasion that I, for the first time, travelled by one, a distance of two hundred miles. But how shall I describe it to you? If I had the words, I have not the knowledge—I scarcely know what happened to myself, much less could I take any observations of the mechanism of this wonderful piece of machinery. As soon as I got to the starting place, I found myself amongst a crowd of persons of all kinds, talking, hallooing, pushing; and all seeming in the utmost state of confusion and excitement; I thought some serious accident had happened, and whilst I was vainly trying to gain information, my luggage was seized by some men whom I at first imagined to be robbers, but afterwards found to be only porters, and I was forced into a carriage, the door of which was instantly fastened upon me; before I could remonstrate upon this violence, the train started off, and I therefore resigned myself quietly to my fate. Soon we were rushing along like the wind in its fury; as I looked out upon the road, my head grew dizzy, my eyes dim, my senses were utterly bewildered, and I hid my face in my hands to recover myself. When I again looked up, we were flying onward at a still greater speed; the birds in their swiftest flight, the scud in the heavens, the comet shooting amidst boundless space, seemed sluggish in comparison with our furious, headlong travelling. The sun was shining brightly upon a beautiful soft landscape peculiar to this country, my nerves were beginning to get reconciled to the unusual circumstances, and I even felt a sort of pleasurable excitement, a species of madness, a reckless desire for greater and still greater speed; when suddenly, as if by magic, we were cast into utter darkness, not a ray of light was perceptible; I felt, however, that we were still rushing through the air at the same furious pace as before—whither, I knew not, unless into the very bowels of the earth; on, on we sped; minutes, hours, seemed to pass, and yet no change; I thought I was doomed to be whisked through dark space for ever and ever, when we were again suddenly thrown into the bright light of the sun. In answer to my bewildered inquiries, I was told that we had merely passed through a tunnel or passage of three or four miles in length, cut through a hill, which was too high for the trains to surmount; and that, instead of having been hours in the transit, we had been but a few minutes. What a wonderful people are these English! Here was a stupendous work, a combination of science and labor, performed at immense cost—and for what purpose? I asked a fellow-passenger, who sat near me, whether the road could not have been taken round the foot of the hill, at much less labor and expense. Certainly it could, he replied, and for about one-half the money, but then we should have lost full ten minutes on the journey. All this science, this labor, this money, expended to save ten minutes in a journey of two hundred miles!! Truly, the English *are* a wonderful people: they have a proverb that time is money, and, certainly, although they are very fond of money, they seem to think quite as much of time. It is a sort of phantom that they are always pursuing; they talk of *saving time* as if they could lock it up in a strong box, and keep it there for use on some future occasion; want of time is as general a complaint as want of money; and to cheat a person of one is looked upon as as great a crime as cheating him of the other, as may be seen by the constant complaints in their newspapers against rail ways and steam vessels which have been a little longer on their passage than the regulated time. We stopped at various stations to put down and take up passengers; and at one place everybody got out of the carriages in order to eat and drink. There was here quite a rush into a large handsome room, where tables were covered with a profusion of various kinds of food, which everybody scrambled at, and began to devour as if they were in a starving condition. While I was gazing in wonder at this scene, and just as I was endeavoring to find something that I could myself eat, there was a loud announcement that the train was again ready to start; and, accordingly out everybody rushed, carrying me along with them. I was obliged to pay the same as the others, although I had eaten nothing; but I could not remonstrate, or the carriages would have gone without me. I understood that not long since, fifteen minutes time was permitted for this meal, but upon many of the passengers complaining of the loss of time, it was reduced to eight minutes. We soon arrived at our destination, after having performed the journey at the rate of 35 miles per hour, which I heard a fellow passenger complain of as being very slow, saying that he had lost 20 minutes, and threatening to write to the newspapers about it. As to myself, I was thankful to arrive safe, as I was in constant fear, from the excessive speed, that we should be all dashed to pieces. My kind host having sent a carriage to meet me at the end of the railroad, I was soon comfortably at rest in his magnificent mansion."—*Letter in the Union Magazine.*

Description of a water-wheel with Verticle Axle, on the plan of the Turbine of Fourneyron, erected at Balgonie Mills, Fifeshire. By Joseph Gordon Stuart, Esq. The paper gave an interesting description of a wheel on this principle recently erected by him at his flax-spinning works at Balgonie, in Fife, and a summary of its general advantages. The Turbine is, in general appearance like an overshot wheel, laid on its side, and wrought at the bottom of the fall. The water enters it from the inner circumference of the crown, and quits it at the outer circumference, impinging on every bucket of the one, and flowing from every part of the other, at the same instant of time. The water is supplied from a reservoir rising above the wheel, in which it stands to the full height of the fall, and is discharged from the bottom of this reservoir though a cylindrial sluice, so as to be delivered not only on every bucket or curve of the wheel at the same time, but also with the full velocity due to its head. The problem sought to be solved in the construction of the curves is, that the water, which has entered without shock, should quit without velocity. On the niceity of this construction will depend the economy of power, cut in general the useful effect obtained will be equal to that of the best constructed overshot wheel. The turbine has the advantage of the overshot wheel in being adaptable to any height of fall (such wheels are working on the continent on falls from 332 feet to 13 inches), in being generally cheaper in construction. and always much cheaper in maintenance,—in being little disturbed in its economical arrangement either by changes in the quality of water supplied, or by being thrown in back water—and in going at such speed as greatly to economize the necessary connecting gearing for factory work. Mr. Stuart's paper, with the illustrative drawings and model, was remitted to a committee of the Society that they may report fully on the merits of that (in this country) novel mode of economising water power. When that committee have made their report it may be expected that the result will be laid more fully before the public, especlally if it be such as to justify the expectations entertained by Mr. Stuart, of this being a most valuable improvement upon any water wheel hitherto in use.

On the Combination of Steam and Canvass Power in Steam Vessels.

Sir:—I send you a few remarks upon a paper in the *Mechanics' Magazine*, No. 1164, page 307, by Lieutenant Ward of the U. S. navy, upon the construction of steam vessels an article which seems to be an attempt to prove the universal superiority of the screw over the paddle wheel in sea-going steamers under canvass. He says, "If the wind be on the side, sails heel the vessel, bury the lee wheel and lift the weather one; under which circumstances both act disadvantageously and produce less speed, or certainly no more than would result from sails alone, or from steam alone." That this is sometimes the case I agree with him. In the trial of the *royal yacht* and the *Rattler*, as stated in another part of your valuable publication, the former gained upon the latter in proportion as she shortened sail; but then, is she not well known to be a very crank vessel? Last summer I was crossing from Ramsgate to Calais in a small vessel of 50 horse power with a very strong side wind, and her speed on setting her canvass was augmented nearly a knot an hour. I must not omit to mention, there was a very heavy sea at the time.

Mr. Ward then proceeds to say, "The case before the wind might not be much, if any better." In answer to this, I have only to say, that during an autumn, winter and spring's residence in Edinburgh, I observed that the *Monarch*, in fine weather, generally performed her voyages in about 47½ hours, when her steam was for the most part unaided by canvass. The distance is about 474 miles, which gives a mean rate of 10 miles per hour. Her engines are 200 horse power, and her tonnage, I think 875. But her commander always said, "Give her canvass and she is a match for any steamer out of the Forth," and as a proof, on one occasion she ran *thirty-eight* hours, or at the rate of 12½ miles per hour, which was said to be her usual speed under sail.

To this case, I must add, that of the *City of Hamburgh*, in the London and Newcastle trade. Under steam she is considered a slow vessel, on account of her small steam power, but with her sails I am informed by good authority that she is a match for the Hull steamers, *Vivid* and *Waterwitch*, both considered fast vessels. But I will not trespass upon your space with any more of these facts, which I think tend to show that the reasoning, "That a ship may go equally well with sails alone, with steam alone, or with both in conjunction," is anything but conclusive. I remain, your obedient servant,

No Bigot.

March 16, 1845.

Croydon Atmospheric Line.—We understand the cost of haulage and maintenance upon the *Croydon Atmospheric line* during the present year, with *heavier weights per train*, are considerably below the cost of the corresponding items during the last year upon the locomotive line of equal strength; and even this result is by no means o fair criterion as to its capability, when the system shall have been matured, and have passed out of its present transition state. The number o trains are advertised to be increased to 40 per diem—*i. e.*, each way. They have latterly been running 32 daily, the average number of carriages 8½ to 9. Time by usual trains for the 10½ miles 32 to 35 minutes, and by the express trains a maximum speed of 60, and in some instances, of 70 miles per hour.

The accounts of the accidental fracture of the vacuum pipe, which occurred during the Easter holidays, and compelled the temporary use of a locomotive engine, were calculated to create an erroneous impression as to the alleged failure of the system; when, in point of fact, the occurrence was in some respects fortunate for the patentee, as it enabled him to prove the facility with which what has been considered one of his greatest difficulties can be overcome. The accident was owing solely to neglect on the part of the servants, who allowed one of the screw couplings to hang down so that it entered the pipe as the train started, and, by raising up the valve, travelled through it for half a mile, when it fractured the pipe considerably, and destroyed the vacuum. A new pipe was affixed, and a vacuum restored, within three hoers and a half after the accident.

NICOLL'S PATENT SAFETY SWITCH for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee. G. A. NICOLLS,

ja45 *Reading, Pa.*

GEORGE VAIL & CO., SPEEDWELL IRON Works, Morristown, Morris Co., N. J.—Manufacturers of Railroad Machinery; Wrought Iron Tires, made from the best iron, either hammered or rolled, from 1½ in. to 2½ in thick.—bored and turned outside if required. Railroad Companies wishing to order, will please give the exact inside diameter, or circumference, to which they wish the Tires made, and they may rely upon being served according to order, and also punctually, as a large quantity of the straight bar is kept constantly on hand.—Crank Axles, made from the best refined iron; Straight Axles, for Outside Connection Engines; Wro't. Iron Engine and Truck Frames; Railroad Jack Screws; Railroad Pumping and Sawing Machines, to be driven by the Locomotive; Stationary Steam Engines; Wro't. Iron work for Steamboats, and Shafting of any size; Grist Mill, Saw Mill and Paper Mill Machinery; Mill Gearing and Mill Wright work of all kinds; Steam Saw Mills of simple and economical construction, and very effective Iron and Brass Castings of all descripions.

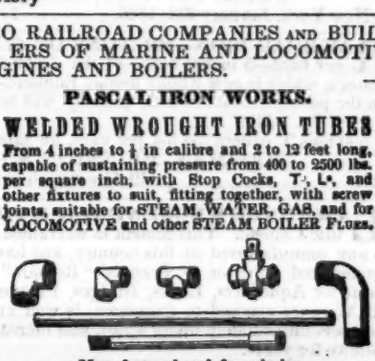
ja45 1y

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to ¼ in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T's, L's, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by

MORRIS, TASKER & MORRIS.

Warehouse S. E. Corner of Third & Walnut Streets,

PHILADELPHIA.

GREAT SOUTHERN MAIL LINE! VIA Washington city, Richmond, Petersburg, Weldon and Charleston, S. C., direct to New Orleans. The only Line which carries the Great Southern Mail, and Twenty-four Hours in advance of Bay Line, leaving Baltimore same day.

Passengers leaving New York at 4½ P.M., Philadelphia at 10 P.M., and Baltimore at 6½ A.M., proceed without delay at any point, by this line, reaching Richmond in *eleven*, Petersburg in *thirteen and a half hours*, and Charleston, S. C., in *two days* from Baltimore.

Fare from Baltimore to Charleston.....$21 00
" " " Richmond..... 6 60

For Tickets, or further information, apply at the *Southern Ticket Office*, adjoining the *Washington Railroad Office*, Pratt street, Baltimore, to

1y14 STOCTON & FALLS, Agents.

WILLIAM R. CASEY, Civil Engineer, New York. Address Box 1078, Post-office. New York. 21

VALUABLE PROPERTY ON THE MILL Dam For Sale. A lot of land on Gravelly Point, so called, on the Mill Dam, in Roxbury, fronting on and east of Parker street, containing 68,497 square feet, with the following buildings thereon standing.

Main brick building, 120 feet long, by 46 ft wide, two stories high. A machine shop, 47x43 feet, with large engine, face, screw, and other lathes, suitable to do any kind of work.

Pattern shop, 35x32 fe. with lathes, work benches,

Work shop, 86x35 feet, on the same floor with the pattern shop.

Forge shop, 118 feet long by 44 feet wide on the ground floor, with two large water wheels, each 16 feet long, 9 ft diameter, with all the gearing, shafts, drums, pulleys, &c., large and small trip hammers, furnaces, forges, rolling mill, with large balance wheel and a large blowing apparatus for the foundry.

Foundry, at end of main brick building, 60x45½ feet two stories high, with a shed part 45½x20 feet, containing a large air furnace, cupola, crane and corn oven.

Store house—a range of buildings for storage, etc., 200 feet long by 20 wide.

Locomotive shop, adjoining main building, fronting on Parker street, 54x25 feet.

Also—A lot of land on the canal, west side o Parker st., containiug 6000 feet, with the following buildings thereon standing:

Boiler house 50 feet long by 30 feet wide, two stories.

Blacksmith shop, 49 feet long by 20 feet wide.

For terms, apply to HENRY ANDREWS, 48 State st., or to CURTIS, LEAVENS & CO., 106 State st., Boston, or to A. & G. RALSTON & Co., Philadelphia. ja45

TO LOCOMOTIVE AND MARINE ENgine Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufactured and for sale by

MORRIS TASKER & MORRIS,

Warehouse S. E. corner 3d and Walnut Sts., Philadelphia. 1tf

LAP—WELDED

WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 5 INCHES DIAMETER,

and

ANY LENGTH, NOT EXCEEDING 17 FEET.

These Tubes are of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER,

Patentee.

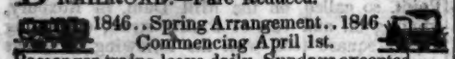
25 28 Platt street, New York.

KEARNEY FIRE BRICK. F. W. BRINLEY, Manufacturer, Perth Amboy, N. J. Guaranteed equal to any, either domestic or foreign. Any shape or size made to order. Terms, 4 mos. from delivery of brick on board. Refer to

James P. Allaire,
Peter Cooper,
Murdock, Leavirt & Co. } New York:
J. Triplett & Son, Richmond, Va.
J. R. Anderson, Tredegar Iron Works, Richmond, Va.
J. Patton, Jr.
Colwell & Co. } Philadelphia, Pa.
J. M. L. & W. H. Scovill, Waterbury, Con.
N. E. Screw Co.
Eagle Screw Co. } Provicence, R. I.
William Parker, Supt. Bost. and Worc. R. R.
New Jersey Malleable Iron Co., Newark, N. J.
Gardiner, Harrison & Co. Newark, N. J.

25,000 to 30,000 made weekly. 35 1y

BOSTON AND ALBANY.—WESTERN RAILROAD.—Fare Reduced.



1846. Spring Arrangement. 1846

Commencing April 1st.

Passenger trains leave daily, Sundays excepted—

Boston 7½ p. m. and 4 p. m. for Albany.
Albany 6½ " and 2½ " for Boston.
Springfield 7 " and 1 " for Albany.
Springfield 7 " and 1½ " for Boston.

Boston, Albany and Troy:

Leave Boston at 7½ a. m., arrive at Springfield at 12 m., dine, leave at 1 p. m., and reach Albany at 6½ p. m.

Leave Boston at 4 p. m., arrive at Springfield at 8 p. m., lodge, leave next morning at 7, and arrive at Albany at 12½ m.

Leave Albany at 6½ a. m., arrive at Springfield at ½ m., dine, leave at 1½ p. m., and arrive at Boston 6½ p. m.

Leave Albany at 2½ p. m., arrive at Springfield at 8½ p. m., lodge, leave next morning at 7, and arrive at Boston at 12 m.

The trains of the Troy and Greenbush railroad connect with all the above trains at Greenbush.

Fare from Boston to Albany, $5; fare from Springfield to Boston or Albany, $2 75.

Boston and New York, via Springfield: Passengers leaving Boston at 4 p. m., arrive in Springfield at 8 p. m., proceed directly to Hartford and New Haven, and thence by steamers to New York, arriving at 5 o'clock a. m.

For Buffalo: the trains for Buffalo leave Albany at 7½ a. m. and 7 p. m., arriving at Buffalo at 8 a. m. and 8 p. m. next day. Returning, arrive at Albany at 4 a. m. and 4 p. m.

New York and Boston, via Albany: the trains from Boston arrive at Albany in season for the 7 o'clock boats to New York. Returning, the boats, leaving New York at 5 and 7 p. m., reach Albany at 5 a. m., in ample season for the morning trains to Boston.—Steamboats also leave Albany at 7 a. m. and 5 p. m. and stop at the usual landing landing plrces upon the river.

The trains of the Springfield, Hartford and New Haven railroad, connect at Springfield, and passengers from Albany or Boston proceed directly on to Hartford and New Haven.

Montreal: through tickets to Montreal may be obtained in Boston, by which passengers may proceed to Troy, and thence by stage via Chester, Elizabeth, etc., and in the season of navigation by canal to Whitehall, and thence by the splendid steamers of Lake Champlain to St. John, via Burlington, and thence by railroad and steamers to Montreal.

The trains of the Hudson and Berkshire railroad connect at Chatham and State Line.

The Housatonic railroad connects at State Line.

The trains of the Connecticut River railroad connect at Springfield, and passengers may proceed without delay to Northampton, and thence by stage to Greenfield, Brattleboro, Bellows Falls, Hanover, Haverhill, etc.

Stages leave West Brookfield for Ware, Endfield, New Baintree and Hardwick; also leave Palmer, for Three Rivers, Belchertown, Amherst, Ware and Monson; Pittsfield for North and South Adams, Williamstown, Lebanon Springs, etc.

Merchandize trains run daily (Sundays excepted) between Boston, Albany, Troy, Hudson, Northampton, Hartford, etc.

For further information apply to C. A. Read, agent, 27 State street, Boston, or to S. Witt, agent, Albany.

JAMES BARNES,
Superintent and Engineer.

Western Railroad Office,
Springfield, April 1, 1846. 14 1y

MANUFACTURE OF PATENT WIRE Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers etc., by

JOHN A. ROEBLING, *Civil Engineer*,
Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railrord, has now run 4 seasons, and is still in good condition. 2v19 1y

BACK VOLUMES OF THE RAILROAD JOURNAL for sale at the office, No. 23 Chambers street.

ENGLISH PATENT WIRE ROPES—FOR THE USE OF MINES, RAILWAYS, ETC.—for sale or imported to order by the subscriber.

These Ropes are manufactured on an entirely different principle from any other, and are now almost exclusively used in the collieries and on the railways in Great Britain, where they are considered to be greatly superior to hempen ones, or iron chains, as regards safety, durability and economy. The plan upon which they are made effectually secures them from corrosion in the interior, as well as the exterior of the rope, and gives a greater compactness and elasticity than is found in any other manufacture.

Many of these ropes have been in constant operation in the different mines in England, and on the Blackwall and other inclined planes, for three and four years, and are still in good condition.

They have been applied to almost every purpose for which hempen ropes have been used—mines, heavy cranes, standing rigging, window cords, lightning conductors, signal halyards, tiller ropes, etc. Reference is made to the annexed statement for the relative strength and size. Testimonials from the most eminent engineers in England can be shown as to their efficiency, and any additional information required respecting the different descriptions and application will be given by

ALFRED L. KEMP,
75 Broad street, New York, sole agent in the United States.

Statement of Trial made at the Woolwich Royal Dock Yard, of the Patent Wire Ropes, as compared with Hempen Ropes and Iron Chains of the same strength.—October, 1841.

WIRE ROPES.				HEMPEN ROPES.			CHAINS.		STRENGTH.
Wire gauge number.	Circumference of rope.	Weight per fathom.		Circumference of rope.	Weight per fathom.		Weight per fathom.	Diameter of iron.	Tons.
	INCH.	LBS.	OZ.	INCH.	LBS.	OZ.	LBS.	INCH.	
11	4½	13	5	10	24	-	50	15-16	20
13	3½	8	3	8½	16	-	27	11-16	13½
14	3½	6	11	7½	12	8	17	9-16	10½
15	2½	5	2	6½	9	4	13½	1-2	7½
16	2½	4	3	6	8	8	10½	7-16	7

N.B. The working load, with a perpendicular lift, may be taken at 6 cwt. for every lb. weight per fathom, so that a rope weighing 5 lbs. per fathom would safely lift 3360 lbs., and so on in proportion. 1y24

RAILROAD IRON.—The subscriber having taken contrats for all the Railroad Iron he can manufacture at his Iron Works at Trenton, until July next, will gladly receive orders for any quantity to be delivered after that time, not exceeding thirty tons per day. Also has on hand and will make to order Bar Iron, Braziers' Rods, Wire Rods and Iron Wires of all sizes, warranted of the best quality. Also manufactures and has on hand Refined American Isinglass, warranted equal in strength to the Russian. Also on hand a constant supply of Glue, Neats' Oil, &c. &c.

PETER COOPER, 17 Burling Slip.
New York, January 23d, 1846. 1y 10

RAILROAD IRON—500 TONS OF 67 LBS. per yard—5 inches high—of the *double headed* pattern, which is now wholly used in England—now on the passage, and a further quantity will be contracted for. Also

500 tons T pattern, 56 lbs. per yard, for sale by

BOORMAN, JOHNSTON & CO.
4t24 119 Greenwich street.

LAWRENCE'S ROSENDALE HYDRAULIC CEMENT. This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight paper-ea barrels, by JOHN W. LAWRENCE,
142 Front street, New York.

☞ Orders for the above will be received and promptly attended to at this office. 32-1y

A. & G. RALSTON & CO., NO. 4 South Front St., Philadelphia, Pa.

Have now on hand, for sale, Railroad Iron, viz:
180 tons 2½ x ½ inch Flat Punched Rails, 20 ft. long.
25 " 2½ x ½ " Flange Iron Rails.
75 " 1 x ½ " Flat Punched Bars for Drafts in Mines. A full assortment of Railroad Spikes, Boat and Ship Spikes. They are prepared to execute orders for every description of Railroad Iron and Fixtures. 1tf

SPRING STEEL FOR LOCOMOTIVES, Tenders and Cars. The Subscriber is engagep in manufacturing Spring Steel from 1½ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

JOAN F. WINSLOW, *Agent*,
1y Albany Iron and Nail Works,

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No 23 Pear street, below Walnut,
1y10 near Third, Philadelphia.

ATLANTIC AND ST. LAWRENCE RAILroad.—Notice to Contractors.—Proposals will be received at the office of the Atlantic and St. Lawrence railroad company in this city, from the 17th to the 27th day of June next, for the grading, masonry and bridging of a division of the road, extending from a point at or near Portland to Royall's river in North Yarmouth—a distance of about eleven miles.

Plans, profiles and specifications will be exhibited, and the requisite information given at the engineer's office in Portland on and after the 17th day of June.

Persons offering to contract for the work, or any part of it, who are unknown to the undersigned or the directors of the company, will be required to accompany their proposals with references as to character and ability.

A further extension of the road, embracing a distance of some fifteen or more additional miles, will be prepared for and put under contract about the first of August next.

By order of the Board of Directors.
WM. P. PREBLE, President.
A. C. MORTON, Chief Engineer.
Portland, Me., May 18, 1846. 1m22

THE WESTERN AND ATLANTIC Railroad.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tuscumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,
Chief Engineer.
Atlanta, Georgia, April 16th, 1846. 1y17

PATENT HAMMERED RAILROAD, SHIP and Boat Spikes. The Albany Iron and Nail Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes, from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for railroads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscriber at the works, will be promptly executed. JOHN F. WINSLOW, *Agent.*

Albany Iron and Nail Works, Troy, N. Y.

The above spikes may be had at factory prices, of Erastus Corning & Co., Albany; Hart & Merritt, New York; J. H. Whitney, do.; E. J. Etting, Philadelphia; Wm. E. Coffin & Co., Boston. ja45

PATENT RAILROAD, SHIP AND BOAT Spikes. The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years' successful operation, and now almost universal use in the United States (as well as England, where the subscriber obtained a patent) are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to holes in iron rails, to any amount and on short notice. Almost all the railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

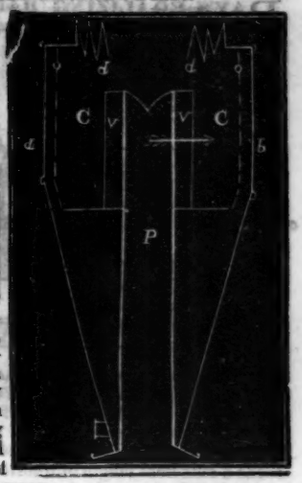
All orders directed to the Agent, Troy, N. York, will be punctually attended to.

HENRY BURDEN, *Agent.*

Spikes are kept for sale, at Factory Prices, by I. & J. Townsend, Albany, and the principal Iron merchants in Albany and Troy; J. I. Brower, 222 Water St., New York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

*** Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufcturing so as to keep pace with the daily increasing demand. ja45

FRENCH AND BAIRD'S PATENT SPARK ARRESTER.



TO THOSE INTERESTED IN Railroads, Railroad Directors and Managers are respectfully invited to examine an improved SPARK ARRESTER, recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger and freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits:

E. A. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendant Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendant Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburgh and Jackson Railroad, Vicksburgh, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

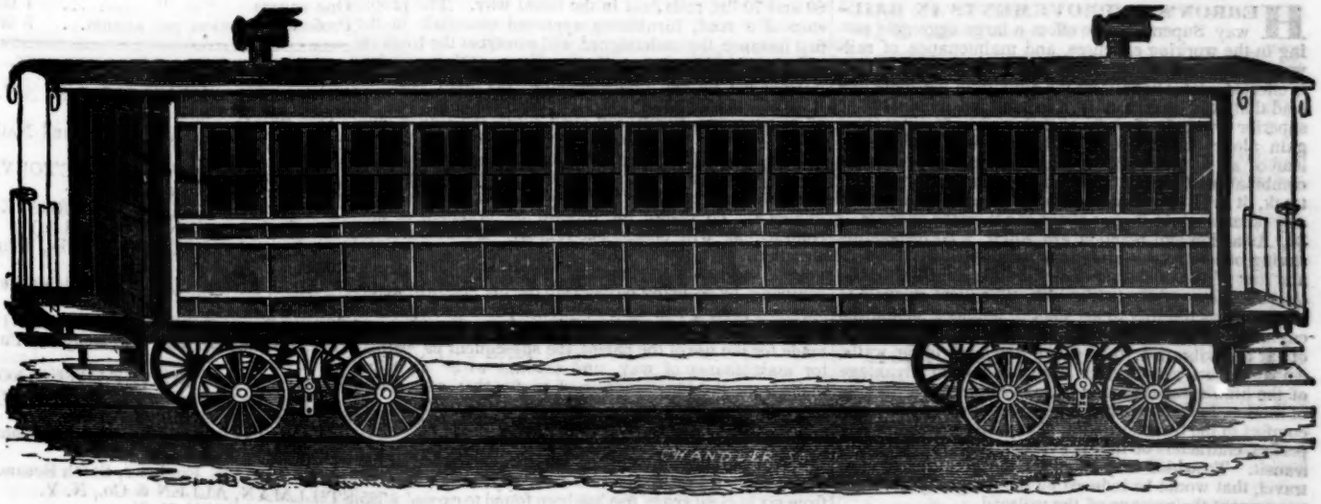
Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city or to Hinckly & Drury, Boston, will be promptly executed. FRENCH & BAIRD.

N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms. *Philadelphia, Pa., April* 6, 1844.

*** The letters in the figures refer to the article given in the *Journal* of June, 1844. ja45

BENTLEY'S PATENT TUBULAR STEAM BOILER. The above named Boiler is similar in principle to the Locomotive boilers in use on our Railroads. This particular method was invented by Charles W. Bentley, of Baltimore, Md., who has obtained a patent for the same from the Patent Office of the United States, under date of September 1st, 1843—and they are now already in successful operation in several of our larger Hotels and Public Institutions, Colleges, Alms Houses, Hospitals and Prisons, for cooking, washing, etc.; for Bath houses, Hatters, Silk, Cotton and Woollen Dyers, Morocco dressers, Soap boilers, Tallow chandlers, Pork butchers, Glue makers, Sugar refiners, Farmers, Distillers, Cotton and Woollen mills, Warming Buildings, and for Propelling Power, etc., etc.; and thus far have given the most entire satisfaction, may be had of D. K. MINOR, 23 Chambers st. New York.

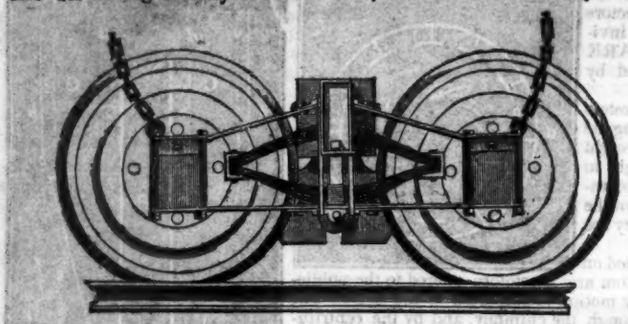
DAVENPORT & BRIDGES' CAR WORKS.



DAVENPORT & BRIDGES CONTINUE TO MANUFACTURE TO ORDER, AT THEIR WORKS, IN CAMBRIDGEPORT, MASS. Passenger and Freight Cars of every description, and of the most improved pattern. They also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices. All orders punctually executed and forwarded to any part of the country

Our Works are within fifteen minutes ride from State street, Boston—coaches pass every fifteen minues. 1y1

RAY'S EQALIZING RAILWAY TRUCK.—THE SUBSCRIber having recenily formed a business connection in the City of New



York, expressly for the manufacture of the newly patented and highly approved Railroad Truck of Mr. Fowler M. Ray, is ready to receive orders for building the same, from Railroad Companies and Car Builders in the United States, and elsewhere.

The above Truck has now been in use from one to two years on several roads a sufficient length of time to test its durability, and other good qualities, and to satisfy those who have used it, as may be seen by reference to the certificates which follow this notice.

There have been several improvements lately introduced upon the Truck, such as additional springs in the bolster of passenger cars, making them delightful riding cars—adapting it to tenders, trucks forward of the locomotive, and freight cars, which, with its original good qualities, make it in all respects the most desirable truck now offered to the public.

Orders for the above, will, for the present, be executed at the New York Screw Mill, corner 33d street and 3d avenue, (late P. Cooper's rolling mills) and at the Steam Engine Shop of T. F. Secor & Co., foot of 9th street, East river, (of which firm the subscriber was late a partner) under the immediate supervision of Mr. Ray himself.

Several sets of trucks containing the latest improvements have recently been turned out for the New York and Erie railroad, and the New Jersey Transportation company, which may be seen upon said roads.

The patronage of Railroad Companies and Car Builders is respectfully solicited.

New York, May 4, 1846. W. H. CALKINS, and Others.

To all whom it may concern:—This is to certify that the New Haven, Hartford and Springfield railroad co., have had in use six sets of F. M. Ray's patent trucks for the last 20 months, during which time it appears to me, they have proved to be the bes and most economical truck now in use.

[Signed,] WILLIAM ROE, Sup't of Power.

I certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Philadelphia and Reading railroad for some time past, under a passenger car.

For simplicity of construction, economy in cost, lightness of material, and extreme ease of motion, I consider it the best truck we have ever used. Its peculiar make also renders it less liable to be thrown off the track, when passing over any obstruction. We intend using it extensively under the passenger and freight cars of the above road.

Reading, Pa., October 6, 1845. [Signed,] G. A. NICOLL,
Sup,t Transportation, etc., Philadelphia and Reading Railroad.

To all whom it may concern:—This is to certify that the N. Jersey Railroad and Transportation company have used Fowler M. Ray's Truck for the last seven months, during which time it has operated to our entire satisfaction. I have no hesitation in saying that it is the simplest and most economical truck now in use.

[Signed,] T. L. SMITH,
Jersey City, November 4, 1845. N. Jersey Railroad and Transp. Co.

This is to certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Long Island railroad for the last year, under a freight car.

For simplicity of construction, economy in cost, lightness of material and ease of motion, I consider it equal to any truck we have in use.

Long Island Railroad Depot, Jamaica November 12, 1845. } [Signed,] JOHN LEACH, Sup't Motive Power.

1y19

HERRON'S PATENT AMERICAN RAILWAY TRACK,

As seen stripped of the top ballasting.

HERRON'S IMPROVEMENTS IN RAILway Superstructure effect a large aggregate saving in the working expenses, and maintenance of railways, compared with the best tracks in use. This saving is effected—1st, Directly by the amount of the increased load that will be hauled by a locomotive, owing to the superior evenness of surface, of line and of joint. This gain alone may amount to 20 per cent. on the usual load of an engine.—2d, In consequence of the thorough combination, bracing, and large bearing surface of this track, it will be maintained in a better condition than any other track in use, at about one-third the expense.—3d, As action and reaction are equal, a corresponding saving of about two-thirds will be effected in the *wear* and *tear* of the *engines* and *cars*, by the *even surface* and *elastic structure* of the track.—4th, The great security to life, and less liability to accident or damage, should the engine or cars be thrown off the rails.—5th, The absence of jar and vibration, that shake down retaining walls, embankments and bridges.—6th, The great advantage of the high speed that may be safely attained, with ease of motion, reduction of noise, and consequently increased comfort to the traveller.—7th, The really *permanent* and perfect character of the Way, insuring regularity of transit. To which may be added the great increase of travel, that would be indueed by the foregoing qualities to augment the revenue of the railroad.

The cost of the Patent track will depend on the quantity and cost of iron and other materials; but it will not exceed, even including the preservation of the timber, the average cost of the tracks on our principal railroads. Generally, the timber structure, fastenings and workmanship, exclusive of the cost of the iron rails, will be from $2,300 to $4,000 per mile. On this structure, rails of from 40 to 50 lbs. per yard, will be equal in effect to 60 and 70 lbs. rails laid in the usual way. The proprietors of a road, furnishing approved materials in the first instance, the undersigned will construct the track on his plan in the most perfect manner, with recent improvements, for one thonsand dollars per mile. And he will farther contract to maintain said track for the period of ten years, furnishing such preserved timber and iron fastenings as may be required, and keeping said track in *perfect adjusiment*, under any trade not exceeding 100,000 tons per annum, or its equivalent in passenger transportrtion, for *Two hundred dollars per mile per annum.** To insure the faithful performance of this contract, he will pledge one-fourth of the cost of construction, with the accruing interest thereon, regularly vested, until the completion of the contract. So that a company, by securing payment to the undersigned at the specified period, will have only $750 per mile to pay for the workmanship on the track, without any charge being made for the use of the patent, the subsequent payments, for maintenance of way, and amount withheld, being made from the large margin of profits that will result from its use.

JAMES HERRON.
Civil Engineer and Patentee.
No. 277 *South Tenth St., Philadelphia.*

* A general average of the repairs done on six of the most successful railroads in this country, for a period of from six to eight years' use has been found to exceed $625 per mile per annum, exclusive of renewal of rails. But few roads in this country carry as much as 100,000 tons per annum. When a road exceeds that quantity, the repairs due to the additional tonnage, up to 200,000 tons, will be charged at one mill per ton; over the latter, and not exceeding 300,000 tons, nine-tenths of a mill, etc. Where there are two tracks to maintain, a large reduction upon those rates will be made. 1y1

THE AMERICAN RAILROAD JOURNAL is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

RATES OF ADVERTISING.

One page per annum	$125 00
One column "	50 00
One square "	15 00
One page per month	20 00
One column "	8 00
One square "	2 50
One page, single insertion	8 00
One columnn " "	3 00
One square " "	1 00
Professional notices per annum	5 00

ENGINEERS and MACHINISTS.

THOMAS PROSSER, 28 Platt St. N.Y. (*See Adv.*)
J. F. WINSLOW, Albany Iron and Nail Works, Troy, N. Y. (*See Adv.*)
TROY IRON AND NAIL FACTORY, H. Burden, Agent. (*See Adv.*)
ROGERS, KETCHUM AND GROSVENOR, Patterson, N. J. (*See Adv.*)
S. VAIL, Speedwell Iron Works, near Morristown, N. J. (*See Adv.*)
NORRIS, BROTHERS, Philadelphia Pa. (*See adv.*)
KITE'S Patent Safety Beam. (*See Adv.*)
FRENCH & BAIRD, Philadelphia, Pa. (*See Adv.*)
NEWCASTLE MANUFACTURING COMPANY, Newcastle, Del. (*See Adv.*)
ROSS WINANS, Baltimore, Md.
CYRUS ALGER & Co., South Boston Iron Company.
SETH ADAMS, Engineer, South Boston.
STILLMAN, ALLEN & Co., N. Y.
JAS. P. ALLAIRE, N. Y.
PHŒNIX FOUNDRY, N. Y.
ANDREW MENEELY, West Troy.
JOHN F. STARR, Philadelphia, Pa.
MERRICK & TOWNE, do.
HINCKLEY & DRURY, Boston.
C. C. ALGER, Stockbridge Iron Works, Stockbridge, Mass.